RUBBER and PLASTICS WEEKLY

VOLUME 141 NO. 18 NOVEMBER 4 1961 ONE SHILLING

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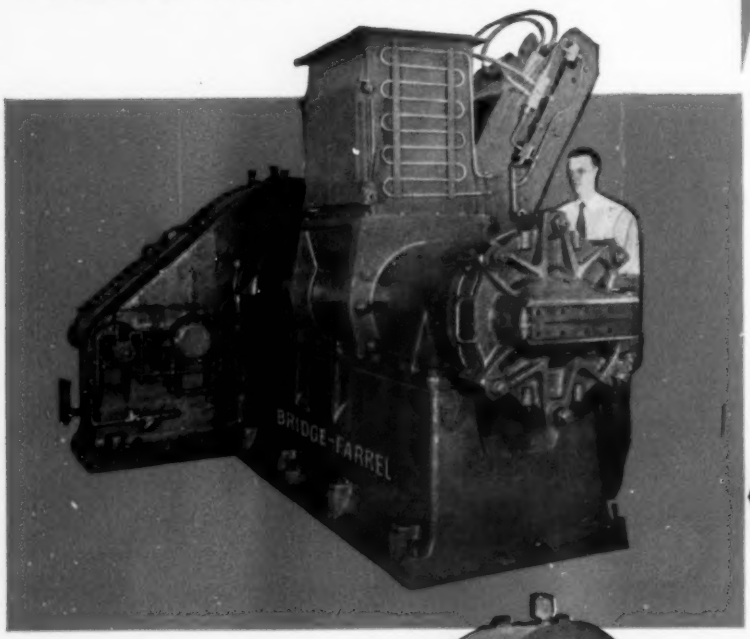

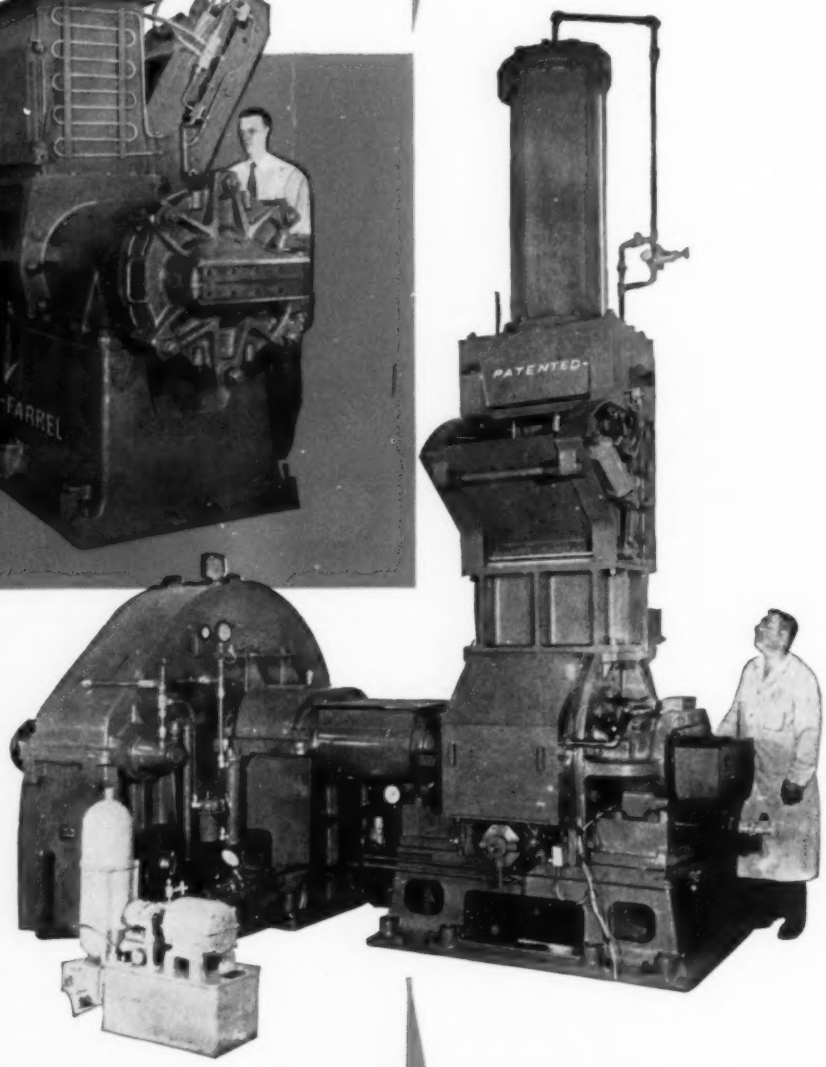

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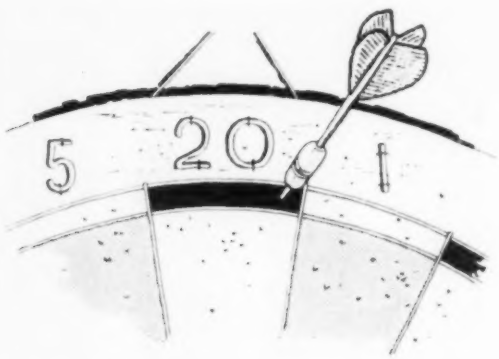

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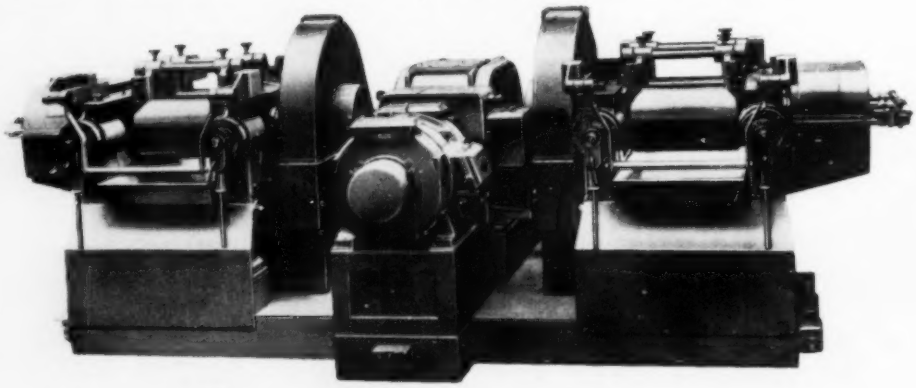
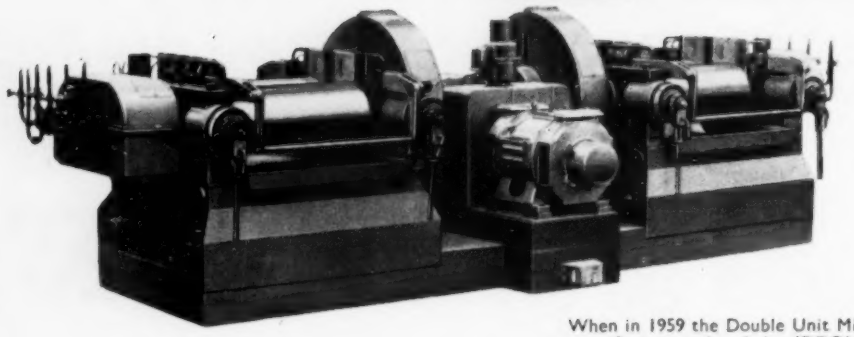


C.E.12 Double Unit Mixing Mills with central drive mounted on steel sub-frame, fitted with vibro insulators. Rolls 16" dia.



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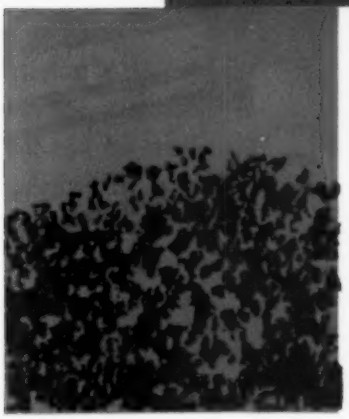

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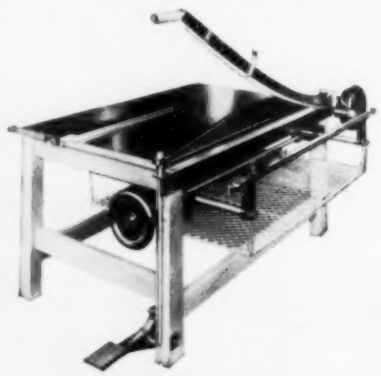

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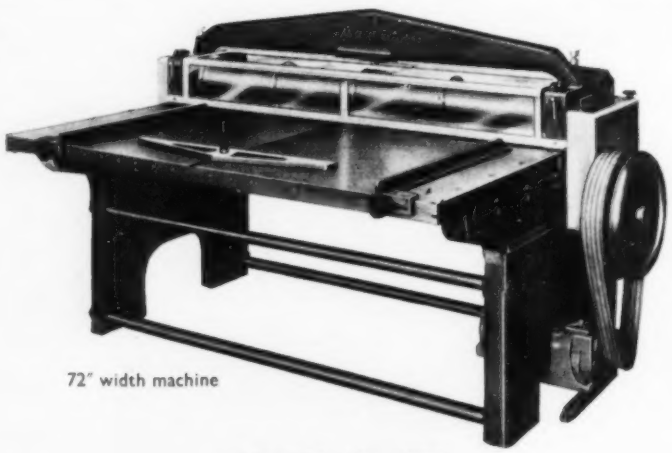

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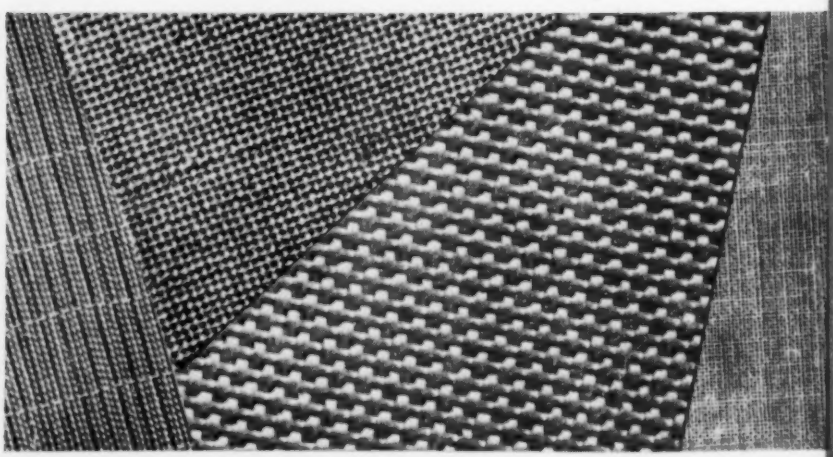

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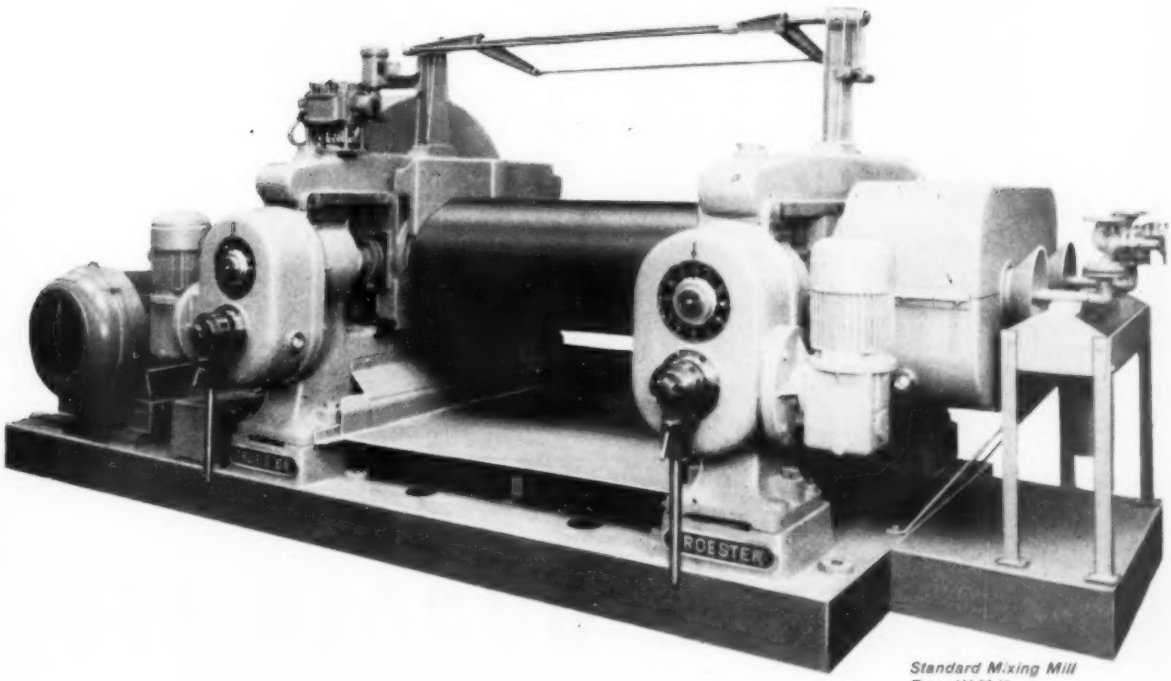

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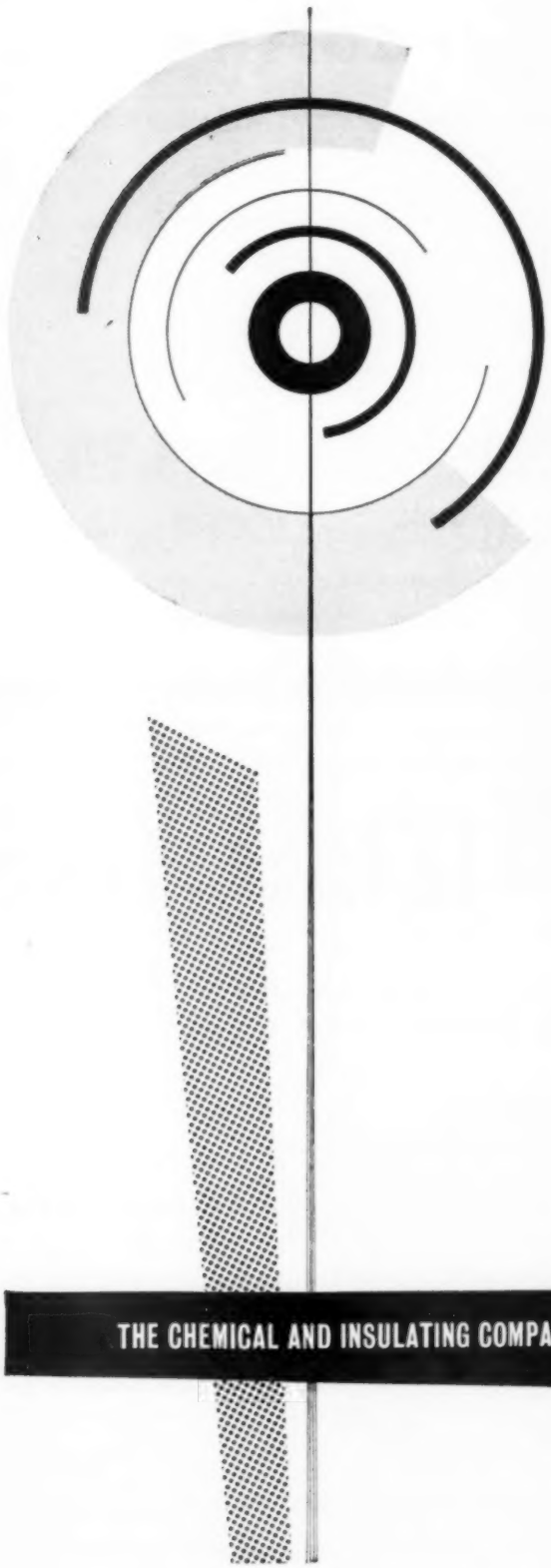

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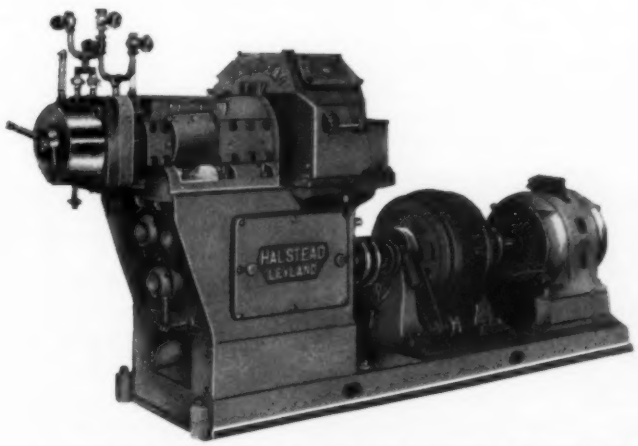
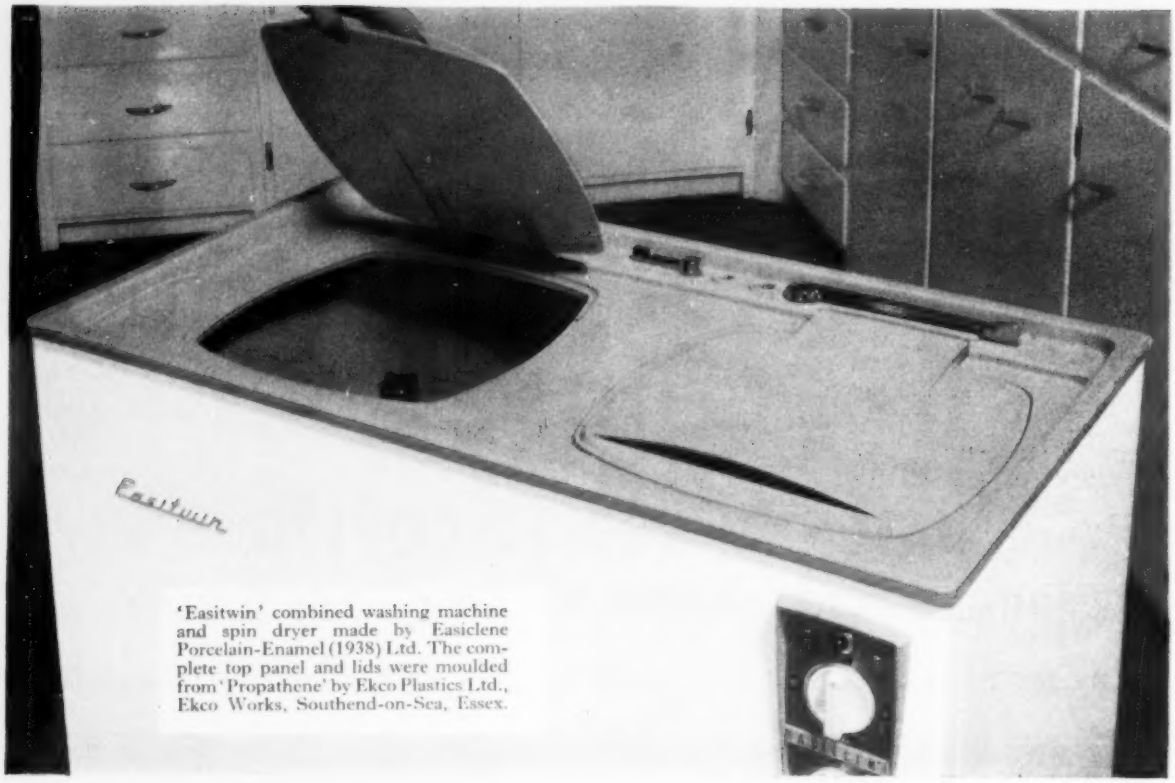


3½" rubber extruder with variable speed dynamatic coupling drive



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RUBBER and PLASTICS WEEKLY

Formerly 'Rubber Journal and International Plastics'

Volume 141 *IN ITS 78th YEAR* No. 19

November 4 1961

Editorial

NOTES OF THE WEEK 745

Articles and News

NEWS BRIEFS 746
FIRST UK POLYISOBUTYLENE PLANT 750
NATURAL PRICE DIPS 748
EKCO AND KODAK 752
FACTICE IN THE RUBBER INDUSTRY 753
INFLATABLE LIFERAFTS 754
GRP BOATS FOR THE NAVY 756
PLASTICS MACHINERY DEVELOPMENTS 764

Features

VIEWS AND REVIEWS 760
MEN AND MATTERS 762
THE LEGAL ANGLE 763
PLANTATION NEWSLETTER 766
RUBBER STATISTICS 766
PLANTATION SHARE SURVEY 768
RUBBER MARKETS 770
INDUSTRY INTELLIGENCE 772
SYNTHETIC RUBBER PRICES 775
TRADE MARKS 776

Classified Advertisements . . . 777 Advertisers Index . . . 782

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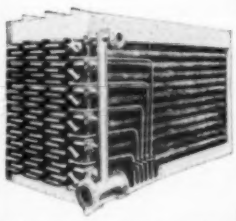

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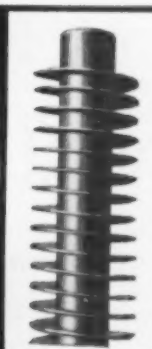

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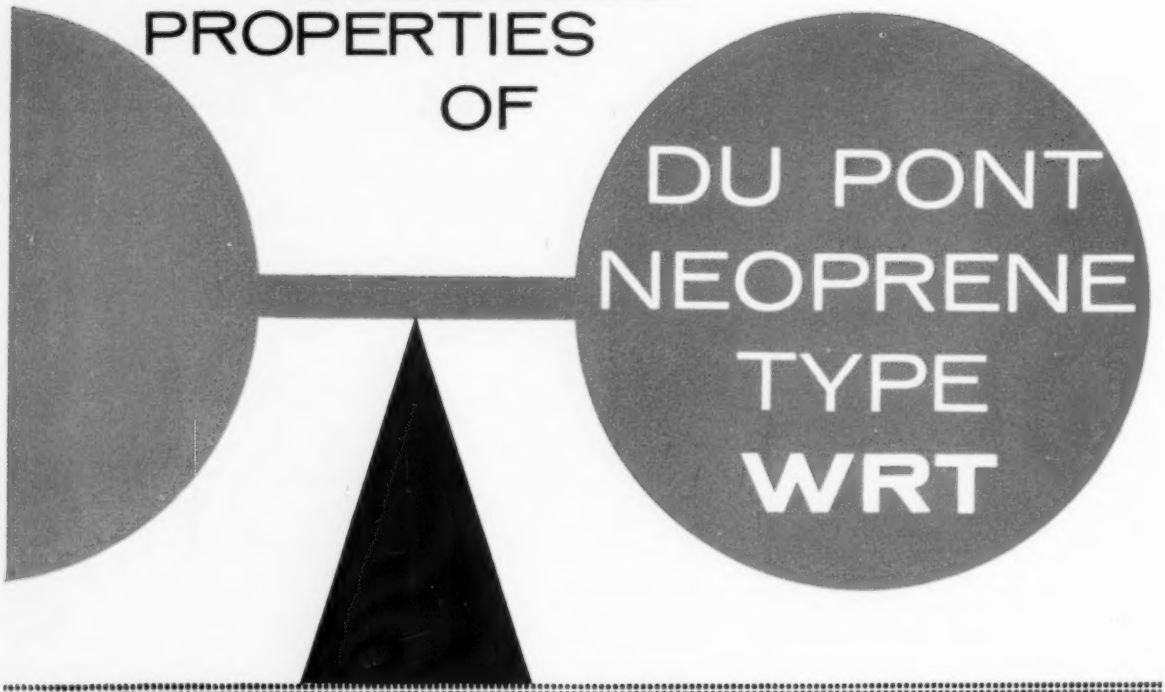

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Rubber and Plastics Weekly 1[illegible]

NOTES of the WEEK

Renewing Contact

A POINT that emerged from the British Institute of Management conference that concluded this week was that management is itself one of its most stringent critics. A stringent but, we think, fair and carefully weighed criticism was delivered by Robert Appleby, managing director of Black and Decker Ltd. He said that British management should get back to direct contact with the shop floor, and employees should be given the chance to participate in ownership. Commenting on the 'institutionalized' relationships between union and management negotiating bodies, he urged de-centralization on both sides.

Behind these remarks lies the fact that a distinct change has taken place in the management/worker relationship since the war: a gradual change that some of us may scarcely have noticed. On the one hand is management; on the other the 'workers'. Any mingling between the two has become less and less, because now between them sit representative committees which settle — or attempt to settle — any differences. Joint consultation has achieved a great deal: as we were reminded the other month when the National Joint Industrial Council of the Rubber Industry celebrated 21 years without an official strike. But an unfortunate corollary has been much less personal contact between management and employees.

The directors of some firms think that because the unions are getting together with their 'personnel people' they are doing all they can to foster good relations. They are wrong. In some situations the union representatives can be as out of touch as anyone else — and when full contact is imagined, there may in fact be none at all. The only remedy is actual personal contact — and the first move must obviously be made by management.

Most employees are interested in the company and in what it makes. A good way of improving contact is for managers to tell the employees directly about the firm. Make more information available. And, as Mr Appleby said at the BIM conference: '. . . management should address employees directly instead of leaving this vital responsibility to representatives. Millions of pounds are spent annually in selling products to the consumer. If a small fraction of this was spent in selling the company and its policies to the people who earn their living making the enterprise work, this would undoubtedly yield a very high return. Management can only gain the respect of the people doing the work by the competent discharge of its own responsibility'.

The Discussion Front

ONE criticism of conferences and lectures is that not enough time is left for discussion. Perhaps the lack of time is understandable only if one has been a lecturer and suffered the deathly, shuffling silence that follows: 'Any questions?' However, things seem to be brightening up on the discussion front. A whole afternoon of the 'Engineering with Plastics' conference, held this week by the Plastics Institute, was thrown open to delegates as an open forum and certainly led to a lively exchange of ideas.

The Institution of the Rubber Industry's London section is devoting one of the meetings of its current session to a panel discussion. The subject chosen is one of the most pertinent in the rubber industry today, and one on which some down-to-earth talking is required: the impact of stereo-regular rubbers on the rubber manufacturing industry. Speakers representing natural rubber, synthetic rubber and manufacturing will answer members' questions. Technical and economic questions concerned specifically with the competitive aspects of natural, polyisoprene, polybutadiene, etc., are being asked for well before the meeting (which will be held in January) so that the speakers can be informed of them and give considered replies. This is a good system. 'Off the cuff' discussions may never leave the ground, but spontaneity can grow from preparation. Details of the meeting can be obtained from the Secretary of the London Section, Du Pont Co. (UK) Ltd., Maylands Avenue, Hemel Hempstead, Herts.

Sphere of Plastics

THE inventor never takes anything for granted. There are always questions in his mind: need it be done like this? Is there a different way of doing it, a better way — a cheaper way? Most of us would find it difficult to conceive of a typewriter without a carriage, but one inventor did, and now a revolutionary new model recently introduced in USA has neither type bars nor a movable carriage.

Plastics play a part in a majority of modern developments — and this typewriter is no exception. The most important component is a sphere moulded of urea and bearing all the letters of the alphabet, numerals and punctuation symbols. This plastic sphere moves across the paper, tilting and rotating at high speed as it selects and types the various characters. The left-to-right motion of the element eliminates the need for a movable carriage. A typist can change type styles in seconds by removing one sphere and clicking another into place.

Revolutionary as this is, no doubt a time will come when this model will be smiled at as one of those 'old-fashioned writing machines'. But no doubt key parts of whatever replaces it will still be made in plastics.

NEWS *Briefs*

MORE EASTMAN PROPYLENE — FIRESTONE FUNSA AGREEMENT — CEYLON SUSPENSION — GENERAL NV LIFTS CAPITAL — VINYL PLASTISOLS INCREASE

●**Ceylon** — The Ceylon Government has further extended the suspension of sales of sheet rubber on the free market until the end of 1962. This action follows the signing of contracts with Poland and Mainland China for the supply of sheet rubber. All shippers will be required to sell their sheet rubber to the Commissioner of Commodity Purchases to help him to fulfil the new contracts. Poland is to take 6,500 metric tons of sheet rubber at 5 cents above the Singapore price per lb. calculated on a weekly basis. Under the terms of the China contract 31,000 metric tons will be shipped to China next year in exchange for 200,000 tons of Chinese rice.

●**Canada** — Dr R. V. Yohe, president of B. F. Goodrich Canada Ltd., predicted that plastics materials would account for 20% of the cost of constructing a house in the foreseeable future, compared with about 3% now. Referring to new materials being exhibited at Canada's first plastics show at Toronto's Canadian National Exhibition, Dr Yohe emphasized the extensive possibilities of plastics pipes. He said that certain building codes would have to be altered to permit extensive use of plastics in house construction, and, he added, 'unions often cause roadblocks if the labour content of a job is changed'.

●**Holland** — The General Tyre and Rubber Co. Holland NV, of Amsterdam, whose shares are listed on the Amsterdam Stock Exchange, is to raise its authorized capital to 90m. guilders from 6m. in view of the company's expansion plans. An announcement said that this year output has been less than sales possibilities. The execution of a new extension plan, again aiming at a doubling of output, has been started, while further expansion in the not-too-distant future is under consideration.

●**India** — Final arrangements have been made for the setting up of a £127,000 Permali Ltd. factory at Bhopal 400 miles south of Delhi. Specialized wood laminates will be manufactured and the installation is scheduled for completion by the late summer of 1962. The operating company will be styled Permali-Wallace Ltd., and Indian sources will be used almost entirely for the raw materials. Resins will be manufactured at the factory and combined with suitable indigenous timbers.

●**United States** — Eastman Kodak Co. has announced plans for a 50% increase in its polypropylene production capacity. The unit, to be added to the present plant operated in Longview, Texas, by Texas Eastman, will have a designed capacity of 10m. lb. annually, and will make Eastman's capacity 30m. lb.

●**France** — The German tyre manufacturer Continental Hanover will set up a subsidiary plant in Sarreguemines, in Eastern France, within the framework of the Common Market, according to reports reaching Paris. The new plant is to be completed by the end of next year.

●**Uruguay** — A technical assistance agreement for the manufacture of tyres and varied rubber products has been signed by the Firestone Tire and Rubber Co., Akron, and Fabrica Uruguay de Neumaticos Sociedad Anonima (FUNSA) in Montevideo, Uruguay. FUNSA, largest industrial concern in Uruguay, has been in operation since 1936. It currently employs about 2,500 workers.

●**United States** — Naugatuck Chemical Division of the United States Rubber Co. is to increase the price of its vinyl plastisol resins by 1 cent a lb. with effect from November 1. Increased expenditures for research and development were cited as the reason behind the price rise which will bring the plastisol resins to 25 cents a lb. It is the first price increase in Naugatuck Chemicals line of vinyl products since 1951.

●**Israel** — Israel's second polyester resin plant, operating under a technical assistance agreement with a British firm, is reported by Barclays Bank DCO to have been opened in Haifa. Projected output is 150/200 tons for the first year. The combined production of this and the existing plant at Beersheba will surpass present local requirements by some 100 tons a year, but increased local consumption and expected export orders should absorb the surplus.

'— and Rodney, you can tell Dr Cotton that there's a new motor cycle for him too when you get your LIRI —'

561

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Natural Price Dips

REACTION AFTER NEW STOCKPILE RULING

AS a result of the Board of Trade lifting the price restriction on its stockpile rubber on Monday (October 30), the price of natural dipped sharply. Tuesday's closing spot price of RSS1 on the London Market was 22¼d. a lb. — its lowest point since July 1958.

The Board of Trade decided that, as a temporary measure, sales could be made without limit, except that not more than 1,000 tons could be sold in any month at a price of less than 27d. a lb.

It is expected that this arrangement will remain in force for at least a year, but if it is shown that the sales are 'unduly depressing the market price' they will be suspended.

The Price-range Agreement

The sale of natural from the British stockpile has been restricted by a price-range agreement with the producing countries and the US Government made in September 1959. During the first year's selling some 67,000 tons of rubber were taken from the stockpile, but over the past 12 months only an additional 4,500 tons has been sold. There are still about 26,500 tons available for disposal.

The market price has been remarkably steady over this period, and the Board of Trade says that it appears that the price-range accepted two years ago is 'out of touch with the current level of rubber prices'. It is not yet clear, however, how far the original price range should be changed, and it is therefore not at present intended to substitute a different series of prices on a long-term basis.

Waiting for USA

As *RPW* went to press further price slipping was expected by some quarters; markets generally were waiting for a move from USA, where on Tuesday a spokesman for the General Services Administration said that 'the United States was studying the British decision on stockpile rubber sales'.

The spokesman said that the British action was being studied by the Office of Production Management (the predecessor agency to OCDM, which dictates United States stockpile policy), GSA (who sells the rubber), the State Department, and other interested agencies such as the BDSA in the Commerce and Defence Department.

Effect on Rubber Shares: 768.

Heavy Duty Tub

Thermo Plastics Ltd. is now producing a tub of 40-gall. capacity, injection moulded in polythene. Specially designed for heavy duty

work, it is a size unobtainable up to now in the UK and is pigmented black. Its main dimensions are: top diameter 34in.; base diameter 25in.; height 22in. Weight is 15lb.

It is resistant to a wide range of chemicals and is suitable for the handling and storage of materials that have to be mixed or compounded. Cost: £6.

Cycolac at Grangemouth

The plan of the Marbon Chemical Division of Borg Warner Corp. of USA to locate a Cycolac ABS plant at Grangemouth has received local approval from Stirling County Council. The plan was jointly announced last month by Marbon in USA and Anchor Chemical Co., which is currently marketing the polymer, in the UK (*RPW* October 14, 565).

15-acre Site

The proposals involve building the plant on a 15-acre site fronting Bo'ness Road, Grangemouth. The Grangemouth Town Council Planning Committee, which is supporting the plan, advanced the proposals to the county.

Acceptance permits the next stage of development, site preparation, and an early start to construction is said to be envisaged.

Filters Order

Palmer Aero Products Ltd., a subsidiary of BTR Industries Ltd., is supplying 50,000 hydraulic filters to Massey-Ferguson for use on agricultural machinery. The filters incorporate a pleated bronze gauze element backed by a steel mesh cylindrical liner. End seals are manufactured in pvc plastisol.

Kays Back to 80% Production

ALTHOUGH Kay Bros. Plastics Ltd. lost five-sixths of its plastics foam converting capacity in the fire which swept through Woodside Mill, New Mills, Derbyshire, on Wednesday October 11, it has achieved 80% of former total production during the first full week's work following the fire (*RPW* October 21, 607).

Referring to this large recovery of normal output, a spokesman of the company said: 'We have every hope of bringing this figure up to close on 100% in the next 2-3 weeks'.

Kays lost plastics foam stocks and converting equipment valued at nearly £100,000 in the fire, but its main premises at Marple, Cheshire, were not affected. High output has been restored by introducing full shift work 24 hours a day and Kays pay tribute to the loyalty and efforts of their staff, particularly the works managers and foremen.

Deliveries of most lines, such as cushions, furniture components and sheets, are now back to normal but as the firm lost practically all the plant used for cutting, profiling and generally fabricating foam, the production of intricately profiled or stamped pieces will be affected until the arrival of new machinery.

Plastics Engineering Conference

The conference on Engineering with Plastics organized by the Plastics Institute, took place at the Institute of Electrical Engineers, Savoy Place, London, W.C.2, on October 31 and November 1 and was extremely well attended.

Papers were delivered on the first day by: W. G. C. Backinsell (Spembly Ltd.) under the title 'An Engineer Looks at Plastics'; Professor Dr Rev Techn U. Hutter (Stuttgart Institute of Technology) 'The Transfer of Force into Highly Stressed Monocoque Bodies made from Glass-reinforced Plastics'; A. W. Rawe (Microcell Ltd.), 'Environmental Behaviour of Glass Fibre Reinforced Plastics'; A. W. Thompson (Bristol Aeroplane Plastics Ltd.), 'The Fatigue and Creep Properties of Reinforced Plastics'.

A full report will be published in a future issue of *RPW*.

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First UK Polyisobutylene Plant

TO BE BUILT BY GRACE AT BAGLAN BAY

W. R. GRACE and Co.'s Overseas Chemical Division is to build the first polyisobutylene plant in the UK at Baglan Bay, South Wales. The announcement was released in London on Wednesday (November 1) by Dewey and Almy Ltd., which is associated with the Grace Overseas Division.

Scheduled for completion by the end of 1962, the plant will be designed and constructed by Parsons Power Gas of London, and will have an annual rated capacity of 8m. lb. The project will cost about £350,000.

A full range of polyisobutylenes will be produced, degrees of polymerization ranging from 600 to 2,000.

Feedstock from BHC

Under a long-term contract with British Hydrocarbon Chemicals Ltd., the feedstock, a mixed butane-butylene stream rich in isobutylene, will be obtained from the adjoining petrochemical plant now being built by BHC at Baglan Bay.

The new Grace plant will employ a process developed and licensed by Cosden Petroleum Corp., a 53% owned subsidiary of W. R. Grace and Co. Cosden has oil refineries and a petrochemical plant located in Texas, and is one of the leading manufacturers of polyisobutylene in USA.

The capacity of Cosden's plant in USA is 16m. lb. A solution polymerization process is employed, with an $AlCl_3$ catalyst.

Construction of the Baglan Bay plant will start around the end of November; site-levelling being already in progress. A spokesman for Dewey and Almy said that the plant would be highly automated, requiring a production staff of only 20. He added that provision was being made for expansion.

Tacky Semi-solid

The uses of polyisobutylene depend on its physical properties, which depend on the molecular weight. A 15,000MW compound is a viscous, sticky liquid. At 50,000 the product is a tacky semi-solid; at 100,000 to 200,000 it resembles crepe rubber.

The highest molecular weight polyisobutylenes will not be manufactured at Baglan.

Polyisobutylenes are important ingredients in the manufacture of numerous end-products, including caulking and sealing compounds. They are also used in the adhesive and electrical industries.

CA for Pens

One quarter of a million clear and seamless packs of cellulose acetate have been supplied by the packaging department of Formica Ltd. to E. S. Perry Ltd., manufacturers of Osmiroid pens at Gosport, Hants. Another 250,000 are shortly to follow.

The increasing popularity of stearine beads has encouraged Price's (Bromborough) Ltd. to add to its tanker fleet a new vehicle specially constructed to carry and discharge beads in bulk. This will enable large users of stearine to take delivery of 8 tons of beads at a time, blown straight from the vehicle into their storage hoppers, from which they can be readily conveyed to any part of their plant without the use of bags, pallets, or trucks

New Hycar Latex for Dipping

British Geon Ltd. has recently started production of a new carboxylic modified butadiene acrylonitrile latex. This latex, to be called Hycar 1700/E1, has been specially developed for the manufacture of rubber articles, such as gloves, by coagulant dipping. Articles made from the new latex are said to be exceptionally resistant to hydrocarbon oils and solvents, to detergents and to oxidative degradation.

A data sheet (H110), besides describing the physical properties of and compounding recommendations for the new latex, also outlines methods for manufacturing both supported and unsupported products.

Cheaper Isophthalic

Grange Chemicals Ltd. has reduced prices of Oronite Isophthalic for which it is the sole distributor in the UK. The cuts range from 2d. a lb. and are now effective. Grange says that the manufacturers 'have achieved a higher standard of purity for this chemical, resulting from continuous process development'.

Increasing use is being found for Oronite Isophthalic in the manufacture of several types of alkyds for products including polyester resins.

Oronite Isophthalic is made by the Oronite Division of the California Chemical Co. This company has a one-third interest in Grange Chemicals, the remainder being held by British Hydrocarbon Chemicals Ltd.

Price Stabilization

Japanese sources said in Washington on October 27 that proposals to stabilize the prices of raw materials produced by under-developed countries would be an important topic at a conference of United States and Japanese Cabinet Ministers now taking place.

United States officials say that USA has expressed its interest in co-operating to bring stability and avoid fluctuations in prices. They say stabilization would not lead to an increase in prices but would prevent fluctuations and price decreases. Studies now being undertaken in Washington include one on rubber.

Epophen Price Cut

Leicester Lovell and Co. Ltd. dropped the price of all its liquid and solid Epophen Epoxide resins supplied in bulk quantities by 6d. a lb. on Wednesday (November 1).

The company said that the price cuts were made possible by increased production and economies in manufacture.

Down Comes Chlorobutyl...

You can now get a lot more Chlorobutyl for your money. In full commercial production, it costs only 2/6 a lb ex store, duty paid. Chlorobutyl – now known as Chlorobutyl HT10-66 – offers several advantages: compatability with other elastomers; increased cure rate; and wider choice of cure systems. Chlorobutyl HT10-66 has already been used with considerable success in America for tubeless tyre inner liners and non-toxic compounds for food containers, high-temperature steam hose, conveyor belting, and various moulded and extruded items. Samples and details of compounding and applications are available from:

Chemicals Division, Esso Petroleum Company, Ltd, 50 Stratton St, London W1. Phone: HYDE Park 7030.

Esso CHEMICALS

ESSO MEANS BUSINESS IN CHEMICALS

Ekco and Kodak

LIAISON LEADS TO PRECISION MOULDING ACHIEVEMENTS

OVER the last 15 years a close liaison has been built up between the Kodak design team and Ekco Plastics technical design and tool making departments.

From this liaison has developed some of the most complicated precision moulding achievements in the plastics industry. The Brownie 44a mouldings (Fig. 2) show that the body is far from being a mere case but is an intricate chassis into which the camera mechanism is built. The main body parts are injection moulded in a special grade of polystyrene, which is photographically opaque. The top and base panels are in high-impact polystyrene and the flexible ever-ready cover is moulded in polythene.

The mould for the camera body is a two-impression one (Fig. 1) producing two bodies on each injection cycle of the machine. This mould incorporates six hydraulically operated moving parts in order to accommodate unavoidable undercuts in the completed moulding. In all the mould comprises over 100 separate parts, each one of which is a precision-engineered component.

Ekco Plastics comments that the freedom offered to the camera designer by modern plastics moulding technique has helped greatly in the development of easy-to-use cameras that can exploit the artistic possibilities of colour film in addition to black and white. This in turn has given rise to the further use of plastics materials for the production of economically-priced projectors with which to show colour slides.

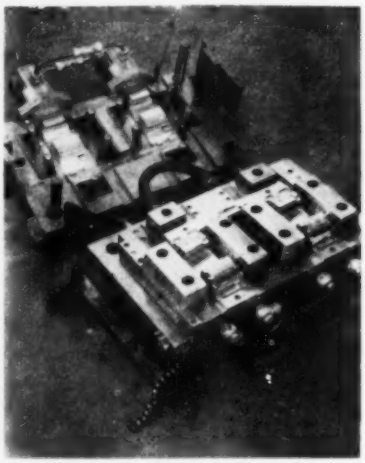


Fig. 1. This two-impression mould produces bodies for the 44a camera. It incorporates six hydraulically operated moving parts to accommodate unavoidable undercuts in the completed moulding. In all the mould comprises over a hundred separate parts, each a precision-engineered component

For example, eight separate mouldings are produced by Ekco for one projector — the Kodaslide. With the exception of the focusing knob, these are all injection moulded in polystyrene, the focusing knob being a simple compression moulding. The base of the Kodaslide forms the frame on to which the other parts are assembled and its ventilating slots call for retractable side cores in the mould to permit removal of the finished moulding from the tool.

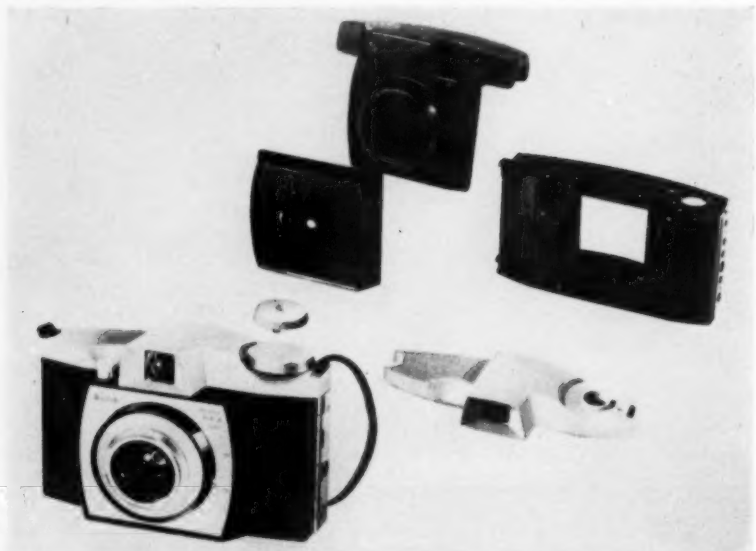


Fig. 2. The Kodak Brownie 44a camera, with its Ekco-moulded components

FBRAM Transport Committee Open Meeting

The annual open meeting of the Federation of British Rubber and Allied Manufacturers' Transport Committee will take place at the Cafe Royal, London, next Thursday (November 9) at 2.30 p.m.

The guest speaker will be A. Granville, assistant freight officer of the British Transport Commission. He will speak on railway modernization and the traffic studies recently initiated through each BR Region by Dr Beeching. A period for questions will follow Mr Granville's talk.

Companies within FBRAM membership who wish to send a representative to this meeting are asked to notify the Federation's Secretary at 19/20 Berners Street, London, W.1.

Printed Cast Polythene Bags

Printed or plain bags made from cast polythene film, in which all the problems previously encountered in making up and use are claimed to have been successfully overcome, are now being produced commercially by Robinson Plastic Films Ltd. (Park Row, Bristol 1).

Both side weld and end weld bags can now be produced; the latter, it is said, can be used in many cases instead of cellulose film bags as they are cheaper and less likely to split during filling and handling, and some types of cellulose film bag filling machines are already suitable for use with cast polythene bags.

Glasgow Research Meeting

Research into problems of basic interest to the rubber and plastics industries were discussed in Glasgow recently between Scottish members of the Rubber and Plastics Research Association of Great Britain and executive staff of the Association's research centre near Shrewsbury.

The meeting was one of several held throughout the country with the object of stimulating interest in common problems and of helping to communicate the valuable technical work of the research centre.

Among those present were Dr W. F. Watson, director of research, and Kenneth MacLellan, chairman of George MacLellan and Co. Ltd., Glasgow, who presided.

PVC/Metal Adhesive

Swale Chemicals of Croydon, Surrey, has introduced an adhesive for pvc to metal. This material is suitable for either sheet or paste pvc.

Factice in the Rubber Industry

ITS MANY FUNCTIONS—FROM PEPTIZER TO ACCELERATOR

THE first of a current series of six lectures under the heading 'Modern Factices and Present Uses in the Rubber Industry', being held at Newton Heath Technical College, Manchester, was introduced by Dr W. F. Watson director of research of RAPRA.

R. Harrison, Principal of the College, said he was delighted to see such a good turn out and was very pleased that Newton Heath could co-operate with industry in this manner. Mr Harrison then introduced Dr Watson to the assembly.

Dr Watson said that before he came to consider what he should say in introduction to the lectures, he had just accepted the term factice, as he felt that many people in the rubber industry did.

Convenient but Misleading

Factice, he said, was a convenient but misleading label, as was the more old-fashioned and less widely used term, rubber substitute. In the same way that the word peptizer was a complete misnomer, so was the word factice, and he hoped that the course of lectures would serve to retain the simple word factice while making clear that factice in its various aspects could be considered to be a peptizer, an energy conserver, a mill debagging improver, an extrusion assistant, a section stiffener and supporter, and finally a vulcanizing agent or accelerator.

Research Association

Dr Watson then mentioned the rather unique set up of the factice manufacturers in the UK, in that while they were in very vigorous competition with one another they also regarded a measure of co-operation in important fields as very much to their mutual benefit and to the benefit of the rubber industry in the use of their products. This had led to the formation of the Factice Research and Development Association, the work of which under its director Dr C. Falconer Flint was well known.

He then went on to give the meeting some background information on the career of the lecturer, R. F. Reynolds, of Hubron Rubber Chemicals Ltd., and concluded by recalling a phrase from Hancock's Personal Narrative which was the kind of philosophical remark absent from the modern book on rubber technology.

'However', wrote Hancock, 'I resolved to make a beginning (for want of which beginning we often fail of things within our reach)'.

Mr Reynolds, said Dr Watson, was going to make this beginning in the case of factice in his lecture entitled 'Factice, Historical and Economic Aspects'.

Mr Reynolds said that vulcanized oils were apparently known in Europe long before vulcanized rubber or, indeed, rubber in any form and they were no doubt the discovery of the alchemists, in whose dog-Latin terminology what we now call a dark linseed oil factice was described as 'oleum lini sulphuratum'.

Useful Processing Aid

Nevertheless, it was the rise of the rubber industry that gave factice its *raison d'etre*, first as a diluent or partial substitute when factors of supply and demand made rubber very expensive and then to its present-day acceptance as a useful processing aid and compounding ingredient in its own right.

The fact that relatively large proportions could be incorporated in a mix without — at least superficially — interfering with its rubbery nature, resulted in considerable usage of factice, destined to decline as demands upon the mechanical performance of rubber increased.

Mr Reynolds dealt with the numerous attempts throughout the years which had resulted in the development of a wide variety of factices — the use of different vegetable oils, fish oils and whale oils, the prethickening of oils by oxidation which permitted factice-making with a much reduced percentage of sulphur, the loading of factice with bitumens and petroleum fractions, mineral fillers and resins, and the acceleration of the factice reaction, pointing out that today's products represented the survival of the fittest from these evolutionary types.

Requirements Covered

Today's three main grades of factice, hard, medium and soft, covered most compounding requirements but factices loaded with bitumen or liquid petroleum fractions also survived mainly because they were a convenient means of adding large amounts of otherwise somewhat intractable ingredients.

When compounding oil-resisting synthetic rubbers the special grades of factice available for this purpose were to be preferred since they gave better oil-resistance and physical properties than did the standard grades in these synthetics.

Today chief among the known factice-making countries were Britain, USA, West Germany and France. Total European production was estimated at more than 5,000 tons per year and consumption stated to be fairly constant (apart from a sharp rise in the early part of the last war) over recent years during which mainly — if not almost entirely — due to the variable price of rubber, the ratio of the price of factice to that of rubber varied from 0.3 to 0.8.

Increase in Demand

The usage of factice having now settled down to what appeared to be a level fully justifiable on technical and economic grounds, one might anticipate in review — as did the lecturer — that continued expansion in the consumption of rubber would give rise to increase in the demand for factice but it was too early to say to what extent the 20% increase in consumption in Britain during 1960 over 1959 was indicative of the expected trend.

There existed the possibility that the systematic research now being carried on by manufacturers and research associations in this country might further enhance factice usage and even extend its use into other fields than conventional rubber compounding.

Chemistry

The second lecture in the series was on the chemistry and microscopy of factice and it was delivered on October 11 by A. H. Clark of the FRADA research laboratory.

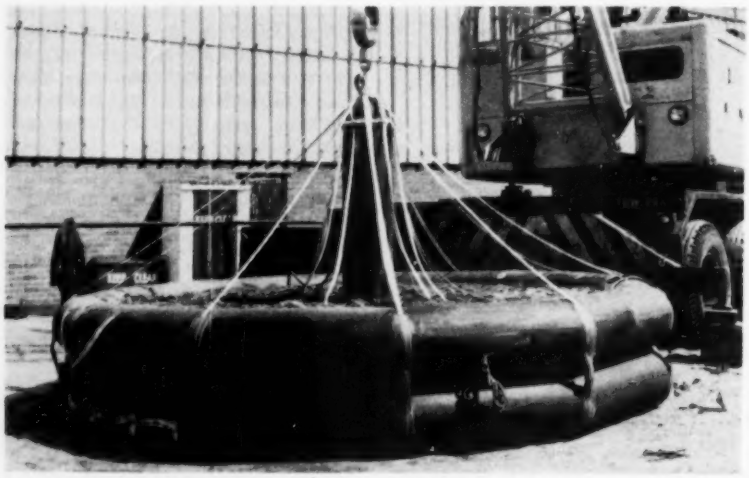
After very briefly describing the chemical composition of triglyceride oils used in the manufacture of factice, Mr Clark gave details of experiments carried out in the FRADA laboratories to determine evolution of hydrogen sulphide and temperature

Continued on page 754

Inflatable Liferafts

DUNLOP DEVELOPMENTS ANTICIPATE NEW REGULATIONS

ALTHOUGH inflatable rubber liferafts are far from new, their value is being more and more appreciated. With the approval of the Ministry of Transport for this development, a big increase in output and usage can be expected. Although they are only complementary to normal lifeboats, it is impressive to note that up to the end of January 1961, 834 lives had been saved by them.



A seafarer raft undergoing an overload test filled with sand. The central column when inflated, forms a rigid structure necessary for davit launching

The Dunlop Seafarer davit-launched inflatable liferaft can be stored in a small and convenient container and, when the necessity arises, can be launched by davit and rapidly inflated with stored compressed carbon dioxide. A special hook automatically frees the raft as it reaches the water and a special hydrostatic release unit automatically opens up unlaunched rafts as the ship submerges.

General Design

The raft is made entirely of a rubberproofed cotton fabric. Extensive tests with rafts made from neoprene proofed nylon fabrics are being made although Ministry of Transport Regulations still specify natural rubber and cotton which have always proved very satisfactory.

The main body of the raft consists of two inflatable sections with a floor which can also be inflated to supply thermal insulation. An insulated canopy covers the whole of the raft, held in position by inflated rubber tubes. Davit launching necessitates a central column made from inflated rubber reinforced hose.

The rafts are hand built and are very strong. Ultimate load tests carried out consist of loading the inflated raft with sand to a total weight of 16,800lb. representing a 5:1 overload. The raft is then lifted clear of the ground without sustaining any damage.

Containers of two kinds are provided, the first of which is a flexible type using neoprene which, in this case, is necessary because the rafts are stored out-of-doors under severe marine conditions. Another form of container is being developed made from bonded glass fibre and constructed in two halves with an extruded waterproof sealing ring between them. These containers are light and, because of their rigidity, completely protect the raft.

Polythene is used extensively in the packing of all the parts. Additional protection is given to the rafts by wrapping them in polythene antichafe covers before placing them in the main container. Each raft contains, by regulation, a fully-equipped survival pack of which many components are sealed inside polythene bags to give protection against water.

International Regulations

Some time ago, an International Convention made recommendations for the safety of life at sea. It is thought that ratification may take place by the end of the year. The regulations will include the fitting of Class 1 vessels with inflatable liferafts capable of being loaded at deck level, lowered to the water and automatically released.

Dunlop has anticipated these regulations and although they will not become compulsory for some time, the planning of Class 1 newbuilds and refits will, of necessity, be based on these requirements. In fact, orders for the supply of this type of equipment for a number of ships are being executed.

FACTICE IN THE RUBBER INDUSTRY

Continued from page 753

exotherms produced during the manufacture of factices from rapeseed and linseed oils.

The much greater evolution of hydrogen sulphide and the increased temperature exotherms for linseed oil as against rapeseed oil were believed to be due to the presence of the very active pentadienoic grouping occurring in both linoleic and linolenic components.

These components were present in copious amounts in linseed oil. From work done at FRADA it was believed that the sulphur/oil reaction proceeded via a polar mechanism and not a free radical one.

Cross-Linkage

Considering the published findings of workers at NRPRA from experiments they performed using sulphur and simple olefins, Mr Clark gave details of the possible products and the types of cross-linkages occurring in factice.

From work done at FRADA using lithium aluminium hydride, the average sulphur linkage had been calculated to contain three sulphur atoms and not two as had been postulated by previous workers. The reason for colour in factices was believed to be due to hyperconjugation. The reaction products from triolein and trierucin with sulphur were very light in colour but whenever linoleic or linolenic groupings were present the factice became proportionally darker.

Using a micro apparatus, work was described where factices had been made on a 0.1g. scale from pure synthesized triglycerides. In summing up, Mr Clark said that it would appear that all other theories proposed in the past for factice structure had been much too simple.

The last lecture in this special course will be held at Newton Heath Technical College on November 8. Dealing with SBR compounds, particularly for tyres, it will be given by Dr C. Falconer Flint, the director of FRADA.

Monsanto

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GRP Boats for the Navy

10 YEARS EVALUATION OF SMALL BOATS BY THE ADMIRALTY

FOR the past ten years the Royal Navy has been evaluating the use of glass reinforced plastics for boats under 30ft. in length, as a result of which GRP construction up to this length is now contemplated where numbers will justify the mould cost. The design of larger boats in GRP is under consideration.

Trials carried out with glass reinforced plastics boats during the last ten years have covered craft from 9 to 27ft. in length, operated at speeds of from 6 to 16 knots. Experience has been gained with resin and reinforced material on GRP, composite, sandwich, round bilge and hard chine designs. Exhaustive testing of boats using both cold-set and hot-set construction has been carried out all over the world in HM ships.

Manpower Saving

One of the great advantages and financial saving arising from the use of reinforced plastics boats in the Navy is the resultant release of manpower which would otherwise be engaged in HM Dockyards on the removal and maintenance of timber used in traditional wooden boats. A further saving would result by abolishing the present need for sheathing of wooden boats used in tropical waters to combat worm and microbe attacks. Apart from the obvious savings of men and money on maintenance, the adoption of this method of construction for small boats in the Navy would mean resultant increases in the speed and ease with which boats can be repaired both on board and at shore bases, compared with the wooden boats, where removal of considerable amounts of planking is often necessary.

One of the main disadvantages was the decline in appearance of the GRP boats after considerable use in Fleet service, but recent paint tests carried out by Admiralty research establishments have established that this can be overcome for all except the fast planing boats by traditional brush painting.

Dinghies

Admiralty experience of boats of this type began in 1951 when two commercial dinghies were purchased. The first was a 9ft. 3in. boat weighing 96lb., using resin bonded glass and diagonal mat cold lay-up construction, and the other a 7ft. 7½in. boat weighing 90lb. and using resin bonded glass and swirled mat hot-set construction. These were tested initially over a period of six months and it was reported that there had been no difference in their ultimate strength and that no repairs had been needed.

To gain further experience with cold and hot-set constructions, two 20ft. motor dories, for use as personnel landing craft, were ordered and successfully tested by the Amphibious Warfare Services. One was constructed using the brush-on method over a female mould, the other using the heated pressure bag hot-set method over an aluminium female mould. These, and further trials, showed that although there was nothing to choose from an operational point of view between cold and hot-set construction, in view of the small number of boats required by the Navy the expensive hot-set method was not justified. Further evaluation was therefore concentrated on cold-set techniques.

Hot Weather Test

The next boat acquired by the Admiralty, and now on Port Auxiliary Service duties at Portsmouth after seven years' use, was a 25ft. medium-speed motor boat of cold-set construction using shell and frames of GRP with gunwale, hog, keel and stem of timber, through bolted. The first five months' service with the Trials Cruiser *HMS Cumberland* in hot weather in the Mediterranean showed that the hull stood up 'moderately well' to Naval handling and withstood impact as well as wooden hulls. The surface tended to crack and craze, especially along the waterline, and was susceptible to damage by abrasion when coming alongside. From the Naval viewpoint a major disadvantage was that appearance of the boat soon deteriorated, where a wooden boat would still have been smart. It was painted in an attempt to improve appearances but paintwork peeled off below the waterline and rubbed off easily. The material continued to abrade easily and the corners of the transom became jagged.

After between four or five years' service the boat was surveyed and the following comments made: Better condition than wooden boat of comparable age; abrasions and deep scores of the hull did not show evidence of ingress of water, delamination or leaching out of the resin; through-bolting of wooden members was not a good feature; impact resistance of glass mat reinforcement was satisfactory for Service use; appearance was poor.

From 1959 onwards the boat has been used experimentally for repair and other tests. Large areas of the skin and framing have been cut out and repaired by various schemes, bilge keels and spray chines attached by differing resin/glass systems,

A 25ft. medium-speed motor boat made from glass reinforced plastics which has been in service with the Royal Navy for seven years. It is at present being used by the Port Auxiliary Service in HM Dockyard, Portsmouth

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several paint schemes applied and a new rudder of novel construction fitted. The boat is still perfectly sound.

Direct comparisons between composite and all GRP construction were made with four 27ft. motor whalers obtained in 1957/58. Two were of composite construction and two of monocoque construction. These were issued to three ships for trials in all climates. The results of these tests showed that the GRP boats were superior to timber hulls with the exception of surface deterioration which made them more difficult to keep smart.

Experience has also been gained by Admiralty with the use of plastics sandwich construction on a 16ft. fast motor boat. The hull consisted of expanded pvc, ¾in. thick, sandwiched between laminations of GRP. This provided inherent buoyancy, a clean internal surface and a degree of rigidity sufficient to allow frames to be dispensed with. The boat was finished in GRP throughout, including canopy, deck and engine case. Service with *HMS Cumberland* showed some lack of adhesion of the laminates to the pvc core (attributed to constructional techniques) but it was considered that the rigidity of the shell and elimination of frames given by the sandwich method of construction was a sound technique for small boats. There was the usual decline in appearance of the boat and although the abrasive resistance of the outer laminate was better than in earlier glass reinforced boats, it was still not good enough for Service use.

During further trials the GRP showed no sign of surface deterioration; the non-skid surface of the deck was found to be inadequate; a reasonable appearance could be maintained by washing with water and detergents.

Other trials or consideration have been, or are still being, given to 52½ft. harbour launches, 9ft. 6in. and 12ft. heavy duty dinghies, 18ft. motor boats and 29ft. survey boats.

As a result of the trials carried out during this 10-year period the Admiralty has formulated a standard repair kit for plastics repairs, which may also be used for semi-permanent plastics repairs to wooden boats.

Due to the reported 'fall off' of appearance of glass reinforced plastics boats, tests of numerous paint schemes to ascertain the most suitable for this application are being carried out. As yet, a paint scheme for fast planing hulls cannot be recommended.

Conclusions

The conclusions reached by the Admiralty as a result of these trials are as follows:

Materials

Glass

(1) Low-alkali glass is more suitable for marine work.

(2) The glass reinforcement prior to use must be dry.

(3) Glass mat, although not so strong as glass roving and cloth, is quite satisfactory for boat hulls up to 30ft. in length of low or medium speed with inboard engines.

(4) The introduction of glass woven roving between layers of glass mat should be considered for craft above 30ft.

Resins

Polyester resins

(1) Selected resins suitable for marine application should be used.

(2) Clear resin for all other than the gel coat of a laminate aids inspection.

(3) A proportion of flexibilizer (or a specially prepared resin) is necessary for gel coat resins to prevent surface crazing, etc.

Epoxide resins

(1) Should be used for securing items after the hull has cured.

(2) Is most suitable for use as a repair resin.

Fillers

Fillers in the resin mix, in general, increase water-absorption properties and, with particular reference to the gel coat, produce a rigidity resulting in star shakes and other surface blemishes. Their use is not therefore recommended.

Construction

Cold set hand lay-up techniques are satisfactory, provided that they are carried out under temperature-controlled conditions.

Resin tends to crush around fastenings and it is necessary to place wood, metal pads or special plastics washers under the heads and points of through fastenings.

Use of through fastenings to be kept to a minimum because of seepage along the fastenings. It is preferable to bond resin/glass angles or lugs, etc., inside the hull for securing purposes.

Wooden engine bearers are more economical than GRP for Service boats because of alterations often required when re-engining is undertaken.

Timber and plywood should be used in the hull where it proves to be satisfactory and economic.

Monocoque construction, i.e. side benches, thwarts, flats and bulkheads, etc., all of GRP, should, because of the numerous moulds needed, be considered only where very large numbers off are required.

GRP hulls up to at least 16ft. in length can, by use of sandwich construction, be given sufficient rigidity to dispense with longitudinal and transverse framing and buoyant material can be efficiently incorporated.

GRP decks having a non-slip pattern incorporated in the outer resin layer do not exhibit sufficient non-skid characteristics.

Service Characteristics

GRP boats, up to at least 30ft. in length, are adequate for Service requirements in respect of strength, impact strength and watertightness.

Not being subject to rot, microbe attack or shrinkage, the maintenance of these boats is appreciably less than that required for wooden boats.

Tropical service does not necessitate the fitting of outer bottom sheathing.

Although the material does not possess anti-fouling properties, marine growth is easily removed.

Repair of the boats, both shore-based and shipborne, is simpler and quicker than repair of wooden boats.

'Fall off' of appearance that has been experienced can be overcome, for other than fast planing craft, by painting.

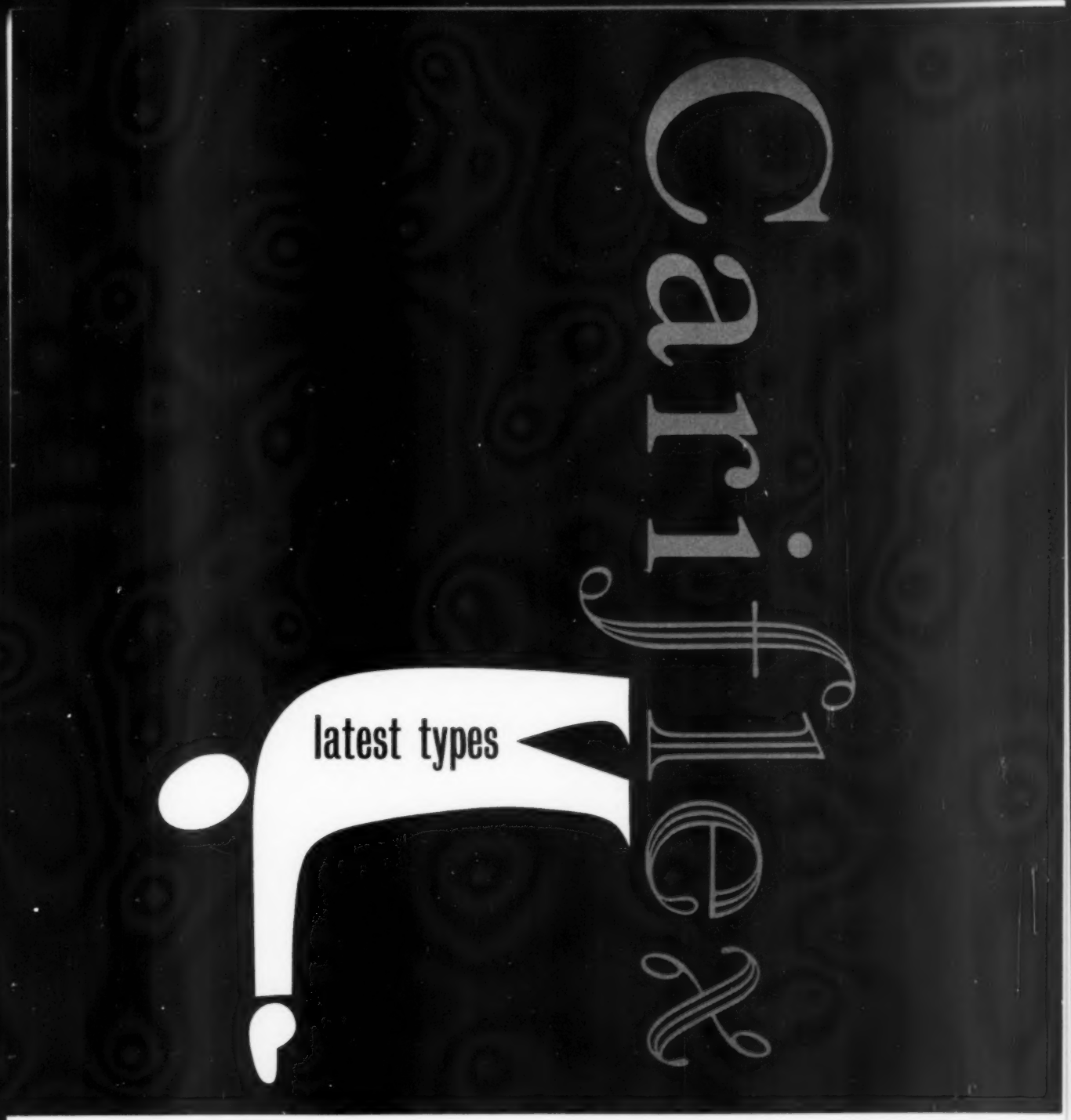
These two boats are among several GRP vessels supplied to the Admiralty by W. and J. Tod (Sales) Ltd. The upper picture shows a 27ft. whaler weighing 28 cwt. — a considerable saving over its wooden counterpart. The lower picture is of a 20ft. dory extensively tested by the Royal Marine Commandos

PTFE Hose

A new ptfe hose has been developed by BTR Industries Ltd. for use with steam hand irons in laundries. Available in 54in., 60in. and 72in. lengths it has a working temperature of 150°C. and a working pressure of 60psi.

Mottled

Dunlop's General Rubber Goods Division has produced a new mottled finish for its Fortiflex rubber resin coke hods.



ISOPRENE RUBBER—now commercially available from the U.S.A.

'CARIFLEX' I-305—a *cis*-1,4-polyisoprene recently developed from 'Cariflex' 1-300. The improved characteristics of this new polymer are lighter colour, greater clarity, lower accelerator requirements, (the same now as natural rubber) greater resilience—plus better ageing and colour stability.

'CARIFLEX' I-500—especially suitable for lower cost, light coloured products. It is an Isoprene Rubber type extended with 25 phr of a light-coloured, non-staining oil and offers similar physical properties to 1-305. Both these new products can be blended with most other rubbers—including natural, SBR, NBR and CR—and can of course be processed on conventional equipment.

For further details of these and other rubbers in the 'Cariflex' range consult your Shell Company (in the U.K., apply to Shell Chemical Co. Ltd., Plastics & Rubbers Division, 170 Piccadilly, London, W.1.)

Shell Chemicals

SHELL

VIEWS and REVIEWS

Triggers

MANY processes operated in our industry are triggered. After preliminary work, such as compounding, the material is formed, by one means or another, into the desired shape of the final product and then someone pulls a trigger, to cause it to set permanently in that shape.

Many of these triggered processes are thermosetting, that is the material sets quickly when heat is applied. But, as every schoolboy knows, in most such reactions time x temperature is a constant, meaning that setting can occur even at room temperature, though more slowly.

Practical considerations lead to a balance being struck. It is expensive either to have to heat to a really high temperature or to have to keep the uncured product for a long time until curing supervenes at room temperature. By means of accelerators, the setting time is adjusted so that all the preliminary operations can be carried out and then, without much waiting, setting can be induced without having to apply undue heat.

Pot Life

Clearly, setting without any extra heat is ideal but then the compound is made so active that the manipulation time available after mixing is generally impossibly short. This is very striking where a process demands that a liquid be set into a solid, and gives rise to the term 'pot life'.

Some adhesives, for example, are highly accelerated and set up rapidly, so that their pot life is short, which in practice means that only small quantities are mixed at a time.

It is an aim of technology in such work to find a mechanism whereby pot life at working temperatures is long, even infinite, but that setting will occur as soon as the trigger is deliberately pulled.

Polyester Setting

Many trigger-designers have explored or investigated means other than heat, *e.g.* an electric current or a sharp blow. The Naval Material Laboratory of the US has come up with a new solution to the problem in the field of reinforced plastics laminates.

Kamnetsky, Frend, and Winans contributed a paper entitled 'New way to extend polyester pot life', to *Plastics Technology*, Vol. 7, No. 6, pp. 39-46.

'Unsaturated polyester resins containing styrene as a cross-linking agent are generally copolymerized to form thermosetting materials by an addition reaction initiated by free radicals', which may be generated in a number of ways although, commercially, only two are in common employment. These are by heat and by means of a selected accelerator which causes cross-linking without applying external heat.

The short gel-time available with the accelerated system rules out the fabrication of large structures, while if an attempt is made to produce such large structures from an unaccelerated system they may be very difficult or impractical to heat.

To escape from this dilemma, the authors have developed a process wherein the free radicals are produced by the radiant energy of ultra-violet light. They have found a number of UV-sensitive materials 'some of which do not produce free radicals directly but may act as activity- or energy-transfer agents to induce radical formation in the unsaturated polyester chain or in the styrene molecule'.

Extended UV exposure causes gelation of many commercial, styrene-based resins, and also causes free radical formation from many organic peroxides, but this approach is not feasible from a production angle because of lack of control or excessive irradiation.

Selection of Sensitizers

The authors therefore made a preliminary study of sensitizers, selected three (benzil, benzoin, and a commercial catalyst), and investigated them thoroughly. The results are given in detail in the paper.

'By the proper selection and use of a sensitizing agent, and adjustment of intensity and time of exposure, glass-reinforced polyester laminates can be fabricated with ultra-violet radiation. They will compare favourably with conventional peroxide curing systems'. Benzil is the sensitizer preferred.

There are one or two minor difficulties but from a practical viewpoint the advantages are great. The sensitized resin will keep for days, enabling large quantities to be made at a time, thus giving savings in mixing costs and improvements in uniformity.

A complicated lay-up, taking hours or even days, is possible while the UV exposure time is quite short, from half an hour to an hour or two, depending entirely on the job. Ovens are, of course, not required; a lamp or bank of lamps, quite portable, makes for great flexibility in production arrangements.

Safety with Tanks

The other day, the Minister of Labour expressed his concern at the increasing number of industrial accidents in Britain.

Accidents can be brought about by being unfamiliar with plant and equipment, and also by being too familiar with it. Broadly, the first is the responsibility of management, and the second is the responsibility of the operative.

In the chemical industry — of which, after all, our industry is a part — it might be expected that such a simple matter as entering a tank would not, by now, be considered a dangerous procedure. Yet the Manufacturing Chemists' Association, Washington, has just issued a new Safety Guide (SG-10) on this very subject, and *I/EC* for September 1961, Vol. 53, No. 9, pp. 62A-64A, deems it sufficiently important to devote two pages to it.

Planning to Enter a Tank

Anyone with actual experience of large tanks knows how important is a carefully-thought-out and adhered-to

COMMENT ON SCIENTIFIC AND INDUSTRIAL MATTERS

by **F. C. JENNINGS**

plan for entering tanks. What are the main points to ensure safety?

The first 'don't' is: Don't rate the danger too lightly. The second is: Never leave it to commonsense. Think about it, prepare for it, beforehand. See that everyone concerned understands both the fundamental hazards and the specific requirements.

This means that both must be formulated clearly and carefully before anyone tries to enter a tank. Survey the tanks, evaluate the hazards, prepare a procedure, and, preferably, write it down.

Are there vapours to be encountered? Toxic, explosive, inflammable? Radioactivity?

Is there enough oxygen for breathing?

Is there any danger of electric shock or inadvertent starting up of moving parts?

Can there be an accidental opening of chemical supply lines or of the steam line?

Is it slippery inside? Are there any obstacles? Can anything fall inside? Is there ample light?

This is not the place to go into more details; the pamphlet or the *I/EC* comments should be consulted for them. A reasonable general scheme is:

1. Survey the hazards.
2. Decide on the procedures.
3. Write them down.
4. Communicate them specifically and seriously to all concerned. See that everyone understands them and the reasons for them. Practice them, if possible, from time to time.
5. Allow no unauthorized person to enter a tank. It is preferable to insist, in many instances, on a written permit.
6. See that there is constant, open communication between the man inside and someone outside. Sometimes a lifeline is essential, but there must be a well-understood procedure about what to do in an emergency, and it must be based on rescue work without exposing more people to the danger.
7. Isolate the tank and, wherever possible, ensure that only with the knowledge and agreement of the man inside can any valve, switch, or lever be operated.
8. See that rescue apparatus is to hand and is always reliable.

British Standards

The lbf. and the ozf.

'The pound, like the kilogramme, is a unit of mass but it has been the custom to use the term loosely as a unit of force (for example, in such expressions as pounds load, pounds per square inch)', says the October 1961 issue of *BSI News*, and then goes on to relate how the British Standards Institution has tackled the problem of this dual and partly incorrect usage.

'The BSI committee which deals with units and symbols has accepted a notation in which a distinction is made between the two concepts "mass" and "force". In this notation the pound has the abbreviation "lb."; the unit called a pound force has the abbreviation "lbf." and is that force which, when acting on a body of mass one pound, gives it an acceleration equal to that of standard gravity (32.1740ft./sec./sec.). A similar distinction is made between a kilogramme (kg.) and a kilogramme-force (kgf.); ton (no abbrevation) and ton-force (tonf.); ounce (oz.) and ounce-force (ozf.); and so on'.

The distinction is already in use at the National Physical Laboratory in the testing of standards of load and at the National Engineering Laboratory in mechanical testing. It has also been adopted in most of the civil and mechanical engineering papers of London University.

Standards and Market Research

An earlier *BSI News* (June 1961) gives an account of the Seventh Standards Engineers' Conference. It followed a predictable, almost standard, course from a not very profound opening speech by the Minister for Science to an admirable summing-up by the chairman, Sir Stanley Harley.

It was apparently much enlivened and invigorated by an unusual and non-standard contribution on 'Market Research and Standards' by I. Maclean of Hawker Siddeley Ltd.

He spoke of the relationship between market research and reduction in manufacturing variety.

'If a potential customer is offered a choice between a standard product which does not exactly match his requirement and a special product at the same price, he will naturally choose the special. The reduction in costs arising from variety reduction must therefore be passed on to the consumer if the company in question is not to lose all its customers whose requirements are not in line with the standard range of products.

'The extent to which the customer is willing to forego his exact requirements in favour of a lower price is obviously the sort of information that would be of great value in determining whether or not to introduce a range of standard products and also in determining the sizes within that range'.

This operational research, the application of scientific methods to areas of business guesswork and commercial second-sight, should be nourished, to the immense gain of industrial efficiency.

The Lifespan of a Product

Mr Maclean also made other striking comments. He explained the concept of the life-cycle of a product: introduction, growth, maturity, saturation, and decline. 'In order to decide on which products to standardize, the place of each product in its life cycle should be known'.

He spoke of 'the waste of misdirected effort that arises when companies plunge into a market without first carefully collecting and assessing facts about that market'.

In the discussion on his paper, Mr Maclean 'offered the interesting thought that the big markets of the future were not those of the under-developed countries but those of the already highly-developed nations'.

He sought constantly to draw parallels between market research and the work of the BSI, and suggested closer co-operation in the form of a market research advisory committee. This point was taken up by the chairman, who thought that the BSI needed more market research to help it to improve its standards.

CHARLES JENNINGS

MEN and MATTERS

A Review of People and Events

by Peter Richards

SUGGESTION schemes do not always yield the kind of suggestions that a company wants — or is willing to implement.

But by and large the rubber industry has taken well to such schemes, and if the biggest percentage of ideas are flops, the ones that really work more than repay the total effort. It would be interesting to calculate the money saved over the whole industry by these schemes.

Most of the large firms use them. Dunlop's I mentioned a little while ago; BTR's is another successful one which has been going now for three years.

One BTR employee who has made the scheme his own personal oyster is Lawrence Eastaugh, who has just received his third cash award.

Latest brainwave from Mr Eastaugh, a chargehand at BTR's Leyland plant, will save the company about £3,000 annually in the manufacture of typewriter accessories. Under the scheme he will be paid 10% of the annual savings — £300.

Since introducing the scheme in 1958 BTR has reviewed over 400 suggestions from operatives, but no employee has entered so many or won so much as Mr Eastaugh.

Colour Danger Signal

Aircraft tyres that change colour when they are worn enough to need replacing are being made by B. F. Goodrich in America.

A layer of coloured rubber under the tread is exposed when the tread is worn through. Goodrich has been building a white undertread into high-speed jet tyres for the US Air Force for more than a year, and has experimented with red, green, and orange undertreads.

Encouraged by the Air Force's interest, the tyre company engineers have spent nearly two years developing coloured compounds that are compatible with tread rubber stocks. Because the coloured rubber covers the entire undertread area, it shows every spot where the tread is worn through, including flat spots and gouges that cannot be detected by ordinary inspection methods.

Temporary, Temporary, Permanent

A. H. McNally, who has been appointed assistant general manager for Lastex and Lactron Ltd., first became associated with Dunlop when he was an undergraduate at Liverpool University in 1950. He took a temporary job with them in his long vacation, and returned again in 1951 and 1952.

After completing his two years' National Service, he joined Dunlop again as an assistant in the development division of its Speke factory. In 1956 he was made senior development assistant.

Three years later he came to London to act as personal assistant to one of Dunlop's directors, and now leaves to take up his new appointment at Fort Dunlop.

More for Shawbury

Offers of members' materials and products for the new RAPRA plastics research laboratories at Shawbury are still coming in.

Since the list I gave last week offers have come from:

Melwood Thermoplastics Ltd., Rubberware Ltd., Midland Silicones Ltd., and British Technical Cork Products Ltd.

Offers of machinery and equipment have been received from: Richard Klinger Ltd., Bradley and Turton Ltd., Metal Box Research Ltd., T. H. and J. Daniels Ltd., Fawcett Preston and Co. Ltd., Smith and Nephew Research Ltd., James North and Sons Ltd., Empire Rubber Co. Ltd., and R. and J. Dick Ltd.

Interested members should write to the Secretary of RAPRA, S. G. Loe, at Shawbury, Shrewsbury, Shropshire.

Long Service Awards

Two long serving employees of Whitby and Chandler Ltd. were given awards at a ceremony which took place recently in the Sheffield works.

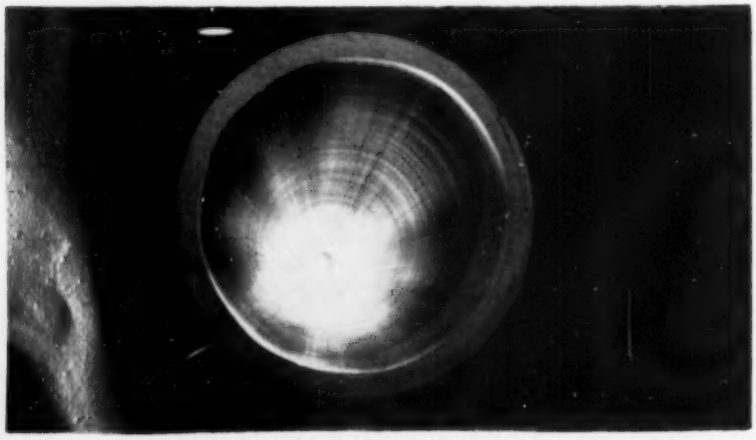
Mrs M. Fox was presented with a dress ring in token of 25 years' service and Mrs G. Keeling, who has been with the company 20 years, received a travelling clock.

T. Chandler, the founder and managing director of the company, who made the presentations, said that it gave him great pleasure to pay tribute to the long service, loyalty and goodwill which existed among the whole staff.

From I.C.I. to IWS

John Garnett, a former personnel manager of I.C.I. Plastics Division, has been appointed the third director of Industrial Welfare Society in its 43 years' existence. The vacancy arose earlier this year when John Marsh, who in 1950 succeeded Sir Robert Hyde, the Societys's founder and first director, accepted an invitation to become director of the British Institute of Management.

At I.C.I. Mr Garnett is currently responsible for the communications section of the central labour department at head office. He has been a speaker for the Industrial Welfare Society and knows its work well; he



No, not something from 'A for Andromeda'. This fine shot of a 6in. bore Durapipe and Fittings Ltd. pipe, made from I.C.I.'s Kralastic ABS copolymer shows the very smooth inner surface of the tube

was a member of HRH The Duke of Edinburgh's Study Conference on the Human Problems of Industrial Communities within the Commonwealth and Empire held in Oxford in 1956. He has been a member of the National Executive of the United Nations Association for the past ten years.

51 Years with Morris Ashby

W. H. Chambers, who has completed over 51 years' service with Morris Ashby Ltd., retired on October 31.

Mr Chambers first joined the company, in London, in July 1910. After periods of service in London and Liverpool, he moved to Hull in May 1924 and has represented Morris Ashby Ltd. and their associates, Columbian International (GB) Ltd., since that time. He is being succeeded in the area by R. P. Bartrum who moved to Leeds in 1959, after service in London and Birmingham, having joined the company in 1949.

Appointments in Brief

E. N. Crump is relinquishing his appointment as managing director of P. B. Cow (Li-Lo) Ltd. on November 1. He will take over the full-time operation of London Moulders (Plastics) Ltd. (of which he is already managing director) and of British Artid Ltd., the capital of which company is being acquired by the P. B. Cow group (*RPW* October 7, 534).

* * *

Sir Laurence Merriam has been appointed a director of the Distillers Co. Ltd. He is chairman of the British Xylonite Co., and a director of Ilford and of Municipal Mutual Insurance.

* * *

G. F. Edwards has been appointed general manager (Production) by F. W. Berk and Co. Ltd., and D. S. Gardner becomes foundry sales representative in the Midlands, South Wales and the West.

Polly Ester is on page 770

From Shop Floor to Manager's Desk

SUCCESS breeds success. Like many old tags this could probably be contradicted by another old tag. But it has a large-sized grain of truth in it.

Steps up the ladder may be far from easy, but actually setting your foot on it at all is the most difficult step. And it must be the right rung at the right time.

Thirty-two years ago Bill Holyoak joined Dunlop as a tyre builder. Within five years he was selected as an instructor to help start a new tyre plant in Durban, South Africa. Two years later he went to India on a similar job.

But it was 1939 before he was promoted to foreman — ten years before his foot was firmly on that first rung.

Then up he went. 1939: senior foreman. 1945: section manager. 1946: departmental manager. 1955: production manager.

Now he has been appointed works manager of the biggest tyre factory in the Commonwealth or Europe — at Fort Dunlop, Erdington, Birmingham, where over 7,000 of the 10,000 employees work on tyre production.

As an instructor abroad, Bill Holyoak had to be able to turn his hand to anything. In going from shop floor to manager's desk he has become familiar with a wide range of jobs — and can still do them all. He continues to take a close interest in training, and many of the young men he has trained now hold responsible positions in factories throughout the world. In recent years he has visited many factories in America and Brazil.

He can certainly be classed as one of the modern generation of industrial managers who believe that the increasing use of machinery makes men more, not less, important.

THE LEGAL ANGLE

Assigning Your Lease

By a Barrister

A PLASTICS company we know had an enormous boom shortly after the war. They moved from their comparatively modest premises into a large factory. They assigned the remainder of their lease, having first obtained their landlord's consent to do so, and promptly forgot about the previous building.

And then, a short time ago, they received a letter from the solicitors to their previous landlords. 'We regret to inform you', they wrote, 'that your assignees have gone into liquidation. Upon our clients surveying the property they were dismayed to find that there have been considerable breaches of the repairing covenants. . . . We understand that your assignees are entirely without assets and in the circumstances we have no alternative but to require you to comply with the covenants in your lease, or alternatively to pay the sum specified in the schedule. . . .'

Needless to say, the plastics people rushed off to their own solicitor.

'You held under the original lease?' enquired the lawyer. 'You entered into the covenant concerned with the landlord, as his original tenant?'

'Certainly — but we assigned the remaining term of the lease, with his consent, and the assignee took on all rights and liabilities under that demise'.

'As between the two of you', replied the lawyer, 'you are right. You transferred what you had to another. But as between the landlord and yourself, the situation remains. "The assignment of a lease", writes one authority, "does not prejudice the personal contract between the tenant and the landlord, and accordingly the tenant remains liable on the covenant for payment of rent and the other covenants on his part contained in the lease, unless the lease otherwise provides" '.

So, unless it is a most unusual lease, the first tenant cannot shake off his responsibilities by an assignment, even when he assigns with the landlord's consent. If the assignee re-assigns, on the other hand, he does free himself from the burdens of the lease. But then there has never been 'privity of contract' between the landlord and himself.

The result in our case? The unfortunate company had to pay for the defaults of its assignee. Which came as a very nasty surprise indeed for its directors.

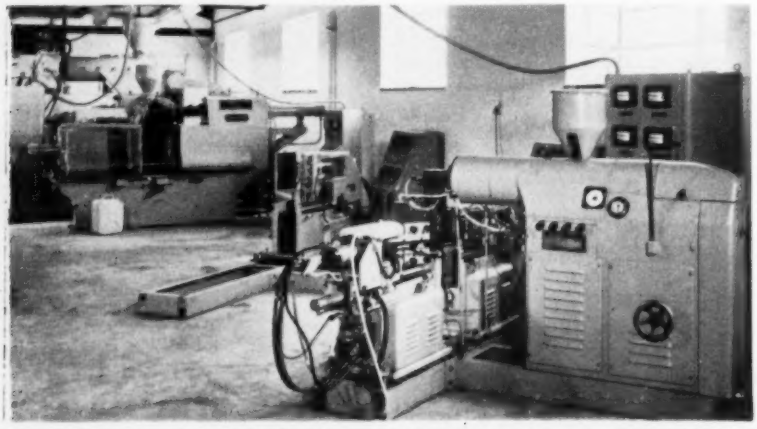
PLASTICS MACHINERY DEVELOPMENTS

Viewing the Equipment

NEW BAKER PERKINS GRANBULL DEMONSTRATION BAY

By JOHN SHEARING

ONE of the problems of all plastics machinery manufacturers is always to have available some machinery for demonstration purposes. Usually, forunately, order books are so full that there is little chance of utilizing any machine for more than a short time before it has to be delivered to an impatient customer.



Part of the new demonstration bay that has been set up by Baker Perkins Granbull Ltd. at Twickenham. The department will be used for customer demonstrations and development work

With the new developments that are arriving with such regularity it is essential that prospective purchasers can view the equipment they wish to employ. With this object in view, Baker Perkins Granbull Ltd. has set up a new demonstration bay at Edwin Road, Twickenham, Middlesex. Apart from customer demonstration, the bay will also be used for development work.

The permanent equipment on view includes 1½in. and 2in. extruders, Models 50 and 51 Blow Moulding machines, certain sizes of Dreher granulators and various items of extrusion ancillary equipment. The Models 52 and 53 Blow Moulding machines can also be made available for demonstration and development work from time to time.

Some details of the extruders and blow moulding machines are given below.

Blow Moulding Machines

Models 50 and 51 Blow Moulding machines are very ruggedly built but use light alloy castings wherever possible to reduce weight. Compressed air is used entirely to motivate the equipment and all sequences are fully automatic.

The machines are very rapid and produce blown bottles and other articles at the rate of up to 1,400 per hour, utilizing the full speed of the extruder. The need for intermittent extrusion is avoided by positioning small standard blowing units directly under the extrusion head. Single or double units may be used and general purpose and polythene design die heads are available with an internal spreader.

These particular machines are suitable for the blow moulding of pvc which all blow moulding machines cannot do. A special design of head is available for the purpose. Any other materials capable of being extruded in tubular form can be moulded on the machines. Typical examples include polythene, polypropylene, polystyrene and certain grades of nylon.

The moulds are made in two halves with an adjustment to vary the lock. They are water cooled and can be produced in any metal but those supplied by Granbull are generally made from Kirksite.

The maximum capacity of Model 50 is 1,400cc. and that of Model 51 9 litres or 2 gallons. Model 52 is a larger machine capable of producing up to 5-gallon containers and 10 gallons for a thin wall if acceptable. In many respects the machine is similar to the smaller models and containers can be blown with the neck up or down, according to preference. This machine is semi-automatic, only requiring the hand removal of the finished product. An interesting attachment is a spigot angling device fitted for the production of angled and off-set necks. Another important feature is a tube stretching attachment to improve the uniformity of wall thickness on unusual shapes. Typical specifications for the machines are given in Table 1.

Extrusion Equipment

A useful range of extruders is manufactured by Baker Perkins. These include Models 15, 20 and 35,

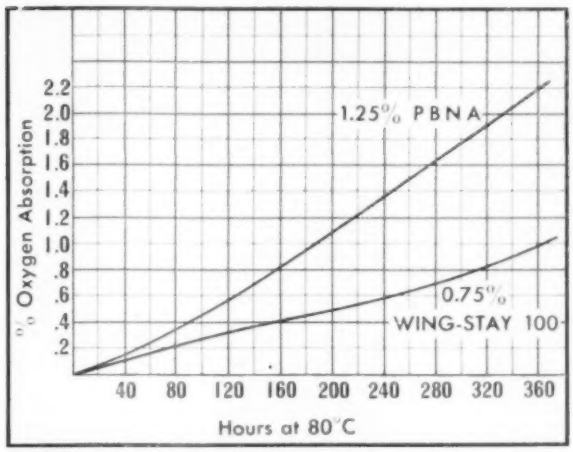
Continued on page 770

TABLE 1
BLOW MOULDING MACHINE SPECIFICATIONS

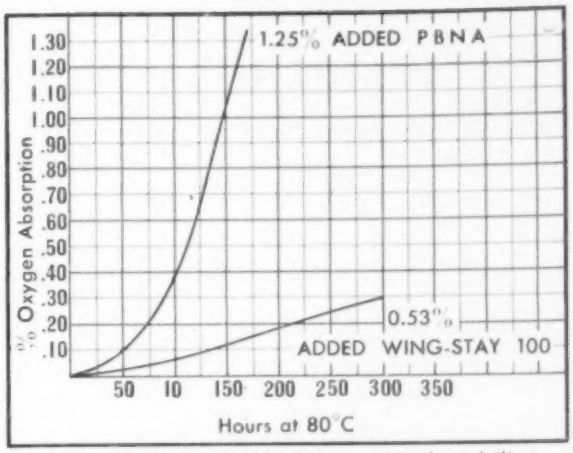
	Model 50		*Model* 51		*Model* 52	
	No.	*Size*	*No.*	*Size*	*No.*	*Size*
Output per hour	900	112cc.	500	560cc.	40	4.5 litre
	240	1,120cc.	245	4.5 litre	15	45 litre
Output with twin head ..	1,400	112cc.	750	560cc.	—	—
Max. size of moulding (in any one direction) ..	5 x 4 x 10in.		7 x 7 x 20in.		18 x 18 x 21in.	
Max. capacity of bottle ..	1,400cc.		9 litre		22.5 litre (or 45)	
Dry cycle time	1,000 per hour		700 per hour		—	
Closing pressure	8,000lb.		12,000lb.		8.75 ton	
Platen dimensions	9¼ x 6in.		14 x 9¼in.		22 x 22in.	

TABLE 2
BAKER PERKINS GRANBULL EXTRUDERS

	Model 15	*Model* 20	*Model* 35
Dia. of screws ..	1.5in.	2in.	3.5in.
L/D ratio	10 : 1, 15 : 1, 20 : 1	10 : 1, 15 : 1, 20 : 1	15 : 1
Reduction gearing ..	Double helical	Double helical	Worm and wheel
Variable speed unit ..	Mechanical	Mechanical	Electrical
Thrust capacity ..	22,400lb.	22,400lb.	77,400lb.
Heater load:			
Barrel	4 to 8kW.	6 to 12kW.	24kW.
Head	Up to 4kW.	Up to 4kW.	Up to 12kW.

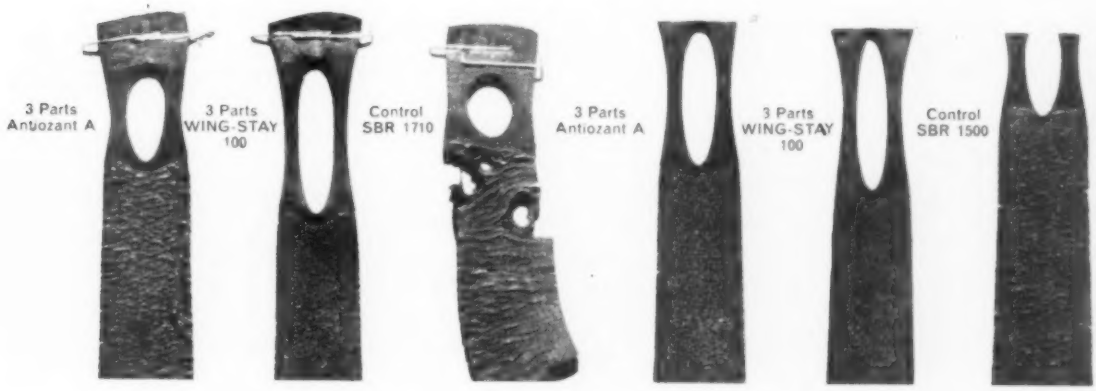


Effect of WING-STAY 100 on the stability of an Oil-Extended SBR Polymer.



Effect of WING-STAY 100 as added stabilizer in a "cold" nonextended SBR Polymer.

DYNAMIC ROOF AGING



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Plantation Newsletter

MALAYA'S RUBBER CORPORATION TO OPERATE SOON

FROM KUALA LUMPUR

MALAYA'S Rubber Exchange Corporation will start operating early next year. Details of the scheme, which has been described as most significant for Malaya, are expected to be announced shortly.

A Bill to set up the Exchange Corporation was given its first reading in the House of Representatives in October and will have its second and third reading in November, when the rules and byelaws and a report by a special committee drafting the rules will be tabled.

The committee was headed by Lew Sip Hon, controller of the export commodity division of the Ministry of Commerce and Industry, and included rubber trade experts from New York, London and Singapore. The rules and byelaws will deal with procedure and provide for the election of directors and classification of members.

The Malayan Government will appoint 12 rubber trade experts in the Federation to the board to run the corporation, including a chairman and deputy chairman. It was announced this week that once Parliament had approved the Bill a start would be made on recruiting of staff.

The committee charged with drafting the Corporation's rules and byelaws recommended that it should be operated along the same lines as the Singapore Chamber of Commerce Rubber Association. The Exchange Corporation will deal with matters like trade disputes, price fixing and facilities for dealings.

Membership will be open to all members of existing rubber trade organizations in the Federation, including rubber producers, dealers, packers and brokers. Provision will also be made for associate membership of overseas rubber trade organizations.

In its final report, the committee said that since most of the rubber exported from the pan-Malayan area was produced in the Federation it was logical that the centre of the rubber trade should gravitate to Kuala Lumpur.

All Sections Welcome

All sections of the rubber industry in Malaya have welcomed the announcement that the Corporation will start next year. Many people stressed that it was only right, now that Malaya was the main natural rubber producing country in the world, that it should have its own exchange.

Gan Teck Yeow, vice-president of the Malayan Estate Owners' Association described the Government's move as a wise one which would bring advantages to Malaya.

Cheah Ewe Keat, a leading rubber trader, said that conditions had changed since independence and he saw no reason why the Federation should continue to channel its business through Singapore instead of having an exchange of its own. He considered that the exchange would help to build confidence of world traders in Malayan rubber.

by our Malayan Correspondent

L. H. N. Davis, representative of the Rubber Growers' Association, said the producers had been aware of the Government's intention to sponsor an exchange and they welcomed the move. 'The Government is certainly entitled to have an exchange', he added.

Meanwhile, the House of Representatives has also passed the Rubber Export Duty (Penang) Bill, which provides for the payment of export duty on rubber exported from Penang and matters connected therewith.

The Minister of Finance, Tan Siew Sin, said he was aware that the rubber trade in Penang did not welcome this proposal, and perhaps that was putting it rather mildly.

They opposed it on the ground that any changes of this nature would disrupt Penang's entrepot trade.

'While I agree that importers of rubber who do so with the intention of re-exporting it, would be subject to a certain measure of Customs control, the Government is prepared to do everything possible to ensure that such control is limited to the minimum necessary to ensure the effective implementation of this Order', he added.

The Minister said he was satisfied, after giving the matter considerable thought, that the entrepot trade in rubber would not suffer as a result of this new system.

Out of about 32,000 tons imported into Penang every year — this figure was taken for the last three complete years — 7,500 tons were remilled and turned into crepe and sheet rubber.

Turn into Crepe

In other words, the real entrepot trade amounted to only 24,500 tons a year. But on the other hand, a total of approximately 22,000 tons was imported into the Principal Customs Area every year and the importers of such rubber had apparently found it profitable to turn such rubber into crepe in spite of an import duty of $20 a ton.

'As the Minister commented: 'I, therefore, see no reason why this section of the trade should suffer at all, because provisions will be made in the appropriate Customs Regulations and Customs Duties Order to exempt rubber imported into Penang Island if such rubber is to be subsequently re-exported.

In addition, by paying export duty and contributing to the replanting cess the smallholders on Penang Island will be entitled to participate in the various replanting schemes which have been specifically designed to assist their brethren on the mainland to replant their obsolescent holdings.

Rubber Statistics

USA — UK — FRANCE — JAPAN

THE Department of Commerce has issued the following rubber statistics for September 1961 (in tons, with figures for August in brackets):

Consumption of natural	33,297	(33,917)
Consumption of latex	3,659	(3,881)
Stocks at month end	57,703	(59,677)
Latex stocks	6,108	(7,294)
Reclaimed consumption	20,295	(20,588)
Synthetic consumption	91,290	(94,812)
Synthetic production	116,523	(114,936)
Synthetic stocks	239,867	(239,840)

United Kingdom

All grades of natural (including latex) landed at Liverpool during September totalled 3,430 tons. Delivered: 4,500. Stock (including Board of Trade rubber): 5,672.

Landed at London: 6,437. Delivered: 8,325. Stock (including BoT): 10,262.

GRAND TOTALS

Landed	Delivered	Stock
9,867	12,825	15,934

France

French natural rubber imports, including latex smoked sheets and crepes in August totalled 12,360 tons compared with 9,347 tons in July. Total imports of synthetic rubber amounted to 4,435 against 5,182 in July.

Malaya supplied nearly half: 5,502 tons, including 1,056 tons of latex.

Japan

The Rubber Manufacturers Association has announced that the production of rubber articles during September amounted to 20,409 tons, compared with 19,665 (revised) tons in August.

Production details of main rubber articles in September were: motor tyre/tubes 9,755; rubber shoes 1,641; belts, 1,262; industrial uses 2,655.

The Association said that consumption of crude rubber in September totalled 14,000 tons, compared with 13,500 tons (revised) in August.

The domestic consumption of crude rubber in October has been estimated at 14,000 tons.

The end-September stocks of crude rubber were 17,860 tons, compared with 17,360 tons (revised) in August.

Imports during October have been estimated at 14,000 tons.

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496 THE ILLUSTRATED EXHIBITOR.
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PLANTATION SHARE SURVEY

Stockpile News Deflates Shares

HUNDREDS of thousands of pounds were knocked off the value of rubber shares in the stock market at the beginning of this week. This sharp reaction followed news that price-range limits on the sales of Government stocks of natural rubber would be suspended at the end of October. The Board of Trade has announced that not more than 1,000 tons will be sold in any calendar month at a price less than 27d. per lb. Under an agreement entered into with producer countries and the United States government in September 1959, sales from the United Kingdom stockpile were fixed on a sliding scale. With the price of rubber below 25¼d. no sales were to be made, between 25¼d. and 27d. up to 800 tons would be sold a month, and over 30¼d. a lb. any amount could be put on the market.

But due to the fact that there has been a downward movement since the agreement — the price is now around its lowest point of the year — only 4,500 tons have been disposed of and the stockpile still contains 26,500 tons. The temporary arrangement is planned to remain in force for at least a year, but the Board of Trade has stated that if these sales should unduly depress the market they will be suspended.

Prices on the Retreat

This has been a bad year for investors with money in the plantation field. As one friend said to me the other day 'the sooner it's over the better'. Since January shares in this part of the Stock Exchange have fallen quite considerably because of the reduced profits now being earned by the industry and the increasing threat from synthetics resulting from the new 'stereo' rubbers. From the 'high' of 93s. this year, shares of the UNITED SUA BETONG group have tumbled to a 'low' of 75s. At the top price, 100 shares of this leading rubber producer would have cost £460 to buy. Whereas today anyone who decides to sell the same number would realize something in the region of £100 less. MALACCA, another well-known name, has come back from a 1961 peak of 63s. 6d. to 43s. 6d., and HIGHLANDS AND LOWLANDS from 6s. 10½d. to below the 5s. mark. Many people, as a result of this overall setback, are therefore wondering what the outlook is like. As I see it the present-day position of trading among the Malayan producers implies a general reduction in profits this year — and presumably in dividends — of around 33⅓% from the levels reached in 1960. This allows for the savings stemming from lower charges for export duty and estate wages. Allowing for this, prospective yields would remain on a basis generous enough to attract support provided some assurance could be given that the fall in price of the commodity had been halted. It is worth noting also that the yield basis for rubber plantation stocks quoted in London is much higher than the rates which local investors in India and Malaya are willing to accept.

Lower Profits

HARRISONS AND CROSFIELD recently announced that profits for the year amounted to £707,100 after tax. This compared with the previous year's total of £720,900. Shareholders of the company will be pleased to hear that a final dividend of 12% has been declared which together with the interim makes up the total for the 12 month period to 15%. Last time the distribution was also 15%, but this included a bonus of 2½%.

Going Up

Good news from the board of SUNGEI BAHRU RUBBER is that the dividend on the £86,461 issued capital is being hoisted from 7d. to 8d. per 2s. share for the year which ended last June. What is more this surprise was boosted by the decision to hand round free shares to holders on a two-for-one basis. The estates of the company have been revalued at £200,000 with the excess of £153,620 over the present book value to be credited to capital reserve. Net profits tot up to £43,664 compared with £50,539 after paying over tax of £26,135 against £30,704. To general reserves this time goes £20,000.

Under Fire

It is not often that a shareholder goes out of his way to criticise the directors of a rubber company. Recently, however, one of the MALAYAN PLANTATION holders got up and did just this over the board's financial policy, pointing out that while profits after tax showed an increase of £100,000 only £44,000 extra had been distributed to shareholders. He contended that the company's liquid assets were excess of requirements and suggested there should be a capital return. Chairman John Sands said in reply that the past year's dividend was the highest in the company's history and the record for the past ten years showed that it had been extremely progressive both with regard to crops and cash return to shareholders. Net liquid assets amounted to about £17 per planted acre, which could not be regarded as excessive. The report was accepted with one dissentient.

Small But Good

Although one of the smaller rubber producers, BATU MATANG RUBBER challenges comparison with the best in this field in terms of efficiency. The fruits of an active replanting programme are maturing in an average yield in the last financial year of over 1,000lb. per acre tapped, resulting in strongly competitive production costs. Since 1956-57 the yield basis has consistently increased from under 600lb. per acre, and it is specially significant to note that, compared with the profit of £19,000 earned in that year, the 1960-61 balance comes out at over £35,000. The comparison is made all the more striking by the fact that replanting has reduced the mature area in the meantime, while net sale prices were 24d. per lb. in 1956-57 and 22½d. per lb. in 1960-61.

Over the past five years annual production has been raised from 666,000lb. to 955,000lb. and, with more than one-third of the planted area still immature, there is clear scope for a continuation of the upward process. Net sale proceeds averaged 22.3d. per lb. against 29.4d. in 1959-60, and estate costs were reduced from 19.5d. to 16.8d. per lb. The profit of £35,200 comfortably covers the reduced dividend, costing £15,200, tax of £14,000, and replanting of £3,500. Financially, the liquid position is rather tight, net current assets figuring at about £1,000 but the company holds trade investments which are presumably worth a good deal more than the balance-sheet cost of £27,000. These investments, which probably consist of rubber plantation shares, provided a gross dividend income of over £7,400. The capital cost is £63 per acre of rubber and the current price of 3s. 1½d. ex dividend for the 2s. shares represents a market valuation of £79 per acre, allowing for the trade investments at their book value. The dividend yield works out at 17½%.

Paper being fed into the die of a new extrusion coating plant at the Farnborough (Kent) works of Telcon Plastics Ltd., a member of the BICC Group. This machine coats paper and other materials with polythene at speeds up to 700ft. a min., and has been installed as an addition to similar plant which Telcon have been operating for some years, to meet increasing demands in the packaging industry for coated papers and laminates

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Rubber Markets

LONDON

Rubber values finished a fairly active week ending November 1 about ¼d. per lb. lower on balance. At one stage, the market was over 1d. per lb. easier. The early decline was attributed to the persistent downward pattern at origin, where at mid-week the fall was accelerated by the British Board of Trade announcement regarding the abolition of the price limit on sales from the Government stockpile. This news brought Singapore prices to lowest levels since June 1958. Trading in London was largely confined to short-covering, but dealers reported that a modest volume of fresh buying orders, some of which were on Continental account, had emerged. In the cif market, interest was mainly centred in forward positions of higher grade sheets, but re-mills and 'browns' were also sought after.

Latest prices are as follows:

No. 1 RSS spot: 22⅞d.-23⅛d.
Settlement House:
December 22⅞d.-23⅛d.
January 23⅛d.-23⅜d.
February 23¼d.-23½d.
March 23¼d.-23½d.
January/March 23¼d.-23½d.
April/June 23⅜d.-23⅝d.
July/September 23½d.-23¾d.
October/December 23⅝d.-23⅞d.
No. 1 RSS cif basis ports:
November 22½d.-22¾d.
December 22⅝d.-23d.
January 22⅞d.-23⅛d.
Godown:
November 76 buyers (Straits cents).

LATEX

Centrifuged 60% latex per gallon in drums, seller, December, January, 13s. 7d. cif European ports. Spot, seller, 14s. Bulk, seller, d.w. 13s. 4d. Normal, seller, December, January, 10s. 7d.

NEW YORK

The New York rubber market ruled as under on October 30:

DEALERS' PRICES

	US cents per lb., ex-dock	
	Oct. 30	Previous
No. 1 RSS, Nov.	27⅛b–27⅛a	28⅛b–28⅛a
Dec.	27⅛b–27⅛a	28⅛b–28⅛a
No. 2 RSS, Nov.	27⅛b–27⅛a	28⅛b–28⅛a
Dec.	27⅛b–27⅛a	28b –28¼a
No. 3 RSS, Nov.	27⅛b–27⅛a	28⅛b–28⅛a
Dec.	27b –27⅛a	27⅛b–28⅛a
No. 1 RSS, Spot	28⅛n	29n
No. 3 amber blanket crepe, Nov.	25⅛n	26⅛n

FUTURES—REX CONTRACT

	Oct. 30	Prev. Close
Nov. ..	27.55b–27.70a	28.50b–28.65a
Jan. ..	27.20b–27.45a	28.10t
March ..	27.13b–27.20a	27.81b–28.00a
May ..	27.10b–27.20a	27.65b–27.95a
July ..	27.05b–27.15a	27.60b–27.90a
Sept. ..	27.05b–27.15a	27.60b–27.90a
Nov. ..	27.05b–27.15a	27.60b–27.90a

Sales: 34. Tendency: Easy.

Futures were easy on October 30, declining by about ⅛ cent per lb. on liquidation and short selling, following the Board of Trade announcement on rubber sales from the stockpile. Traders expected the GSA also to relax its policy of stockpile rubber disposal, resulting in possibly further pressure on rubber prices. Dealings in the futures market today were fairly active. Physical rubber was easier but quiet. In late trading, the futures loss extended to more than ¼ cent per lb. Physical rubber continued quiet and easy.

SINGAPORE

On October 30 prices were marked down 2 cents at the opening on the British Board of Trade announcement on stockpile rubber, and reached the lowest levels since June, 1958. Thereafter, values fluctuated nervously within narrow limits until towards the end of the morning when rather better buying interest steadied the market. Lower sheet interest was fair but selective. A reserve of sellers hampered trading. In the afternoon the market ruled steady on persistent short-covering and reserve of sellers. Lower sheets were in rather less demand.

	Malayan cents per lb., fob Malayan ports to open ports	
	Oct. 30	Prev. Close
No. 1 RSS, Nov. ..	76⅛–76¼	78 –78⅛
Dec. ..	77⅛–77⅛	78⅛–78⅜
No. 2 RSS, Nov. ..	75⅛–76⅛	77⅛–77⅛
No. 3 RSS, Nov. ..	74⅛–75	75⅜–76⅛
No. 4 RSS, Nov. ..	73⅛–73⅜	74⅛–75⅛
No. 5 RSS, Nov. ..	71⅛–72	72⅛–73⅛
No. 1 RSS, Prompt	76⅛–77	77⅜–78⅛
No. 3 blanket thick remilled crepe, Nov.	70⅛–71⅛	71⅛–72⅛
No. 1 fine pale crepe, Nov.	87⅜–89⅛	88⅛–89
2x thin brown crepe, Nov.	68⅜–69⅜	70 –71

Tendency: Quietly steady..

AMSTERDAM

The Amsterdam rubber market ruled as under on October 30:

	Guilders per kilo	
No. 1 RMA	Oct. 30	Previous
October	Deleted	2.24
November ..	2.20	2.24
December ..	2.20	2.24
Oct./Dec.	2.20	2.24
January	2.20	2.25
February	2.20	2.25

Sales: Nil. Tendency: Dull.

DJAKARTA

	Rupiahs per kilo	
	Oct. 30	Previous
Spot, No. 1 Priok ..	36.00b	36.00b
Spot, No. 2 Priok ..	35.00b	35.00b
Spot, No. 3 Priok ..	34.00b	34.00b
Spot, No. 1 fine pale crepe	35.50b	35.50b

Tendency: Very steady.

CEYLON

The price of No. 1 RSS at Colombo on October 30 was 90 (92¼) Ceylon cents per lb.

BANGKOK

The price of No. 1 RSS at Bangkok on October 30 was 25.75 (25.75) US cents per lb.

PLASTICS MACHINERY DEVELOPMENTS

Continued from page 764

the last with a 15:1 LD ratio and the others with alternative ratios of 10:1, 15:1 or 20:1.

A wide range of screws is produced, suitable for the majority of extrudable thermoplastics. They have constant pitch with decreasing flight. One of the interesting features of the barrel is the multi-zone cooling. Model 35 has 5-zone cooling channels and the other extruders have an equivalent feature. The barrels for the machines are fitted with fully hardened sleeves of Nitralloy, although other materials including X-alloy may be specified. Barrel heaters may be either resistant type band heaters or mains frequency induction heating units.

All these machines, in the smaller range by modern standards, include many modern features. The special characteristics of the barrels and screw have already been mentioned and these may be coupled with the ease of maintenance and cleaning. There are six transistor-type temperature controllers together with, in the case of Models 15/20, motor starter gear (push button operation), motor ammeter, fuses and on/off switches with indicator lamps for barrel heating.

Some technical details are given in Table 2 (page 764).

Strike at Carrington

A strike of 2,000 construction workers at Shell Chemical's Carrington plant was still unsettled when *RPW* went to press on Wednesday (November 1).

The strike, supported by six unions, is over a wage claim.

see you through your problems...

Storeys range of vinyl materials offers a solution to almost any design or manufacturing problem —even to applying a durable, attractive covering to any shape (product or component) as odd as a stiletto heel—speedily and economically. In the fashion field, Storeys spectacular new material, Neolan, offers exciting possibilities for garments and fashion accessories. For outdoor use, Plastolene, the tough reinforced vinyl film, made up into garden furniture, shop blinds, awnings and swimming pools is making exteriors more glamorous. And for domestic use, Storeys gay, labour-saving Con-Tact self-adhesive plastics, together with many decorative vinyl curtaining and upholstery materials, are making every home more delightful to live in.

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Storeys OF LANCASTER

White Cross, Lancaster
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Telex No: 658

Industry INTELLIGENCE

Technical Data

I.C.I. Pigments

Imperial Chemical Industries Ltd., Dyestuffs Division, has recently issued three technical information leaflets.

No. 627 deals with heat and sterilization fastness of pigments in printing ink media. A wide selection of organic and inorganic pigments have been assessed for heat and steam sterilization fastness in a typical tin-printing ink medium, and the results are recorded.

No. 628 is on fastness to reagents of pigments in printing ink media. A range of organic and inorganic pigments have been tested, as prints in a linseed oil varnish, for fastness to several reagents. The results are all listed.

Finally, leaflet No. 631 is concerned with wool and wool/viscose rayon carpet yarn, and recipes for the British Colour Council shades for interior decorating (*Town and Country Colours*, 1962-63, *Series* 5) are given. Recipes for 100% wool and 55/45 viscose/wool carpet yarn are tabulated.

Bakelite Epoxide Resins

Bakelite Ltd., 12-18 Grosvenor Gardens, S.W.1, has issued a data sheet on the production of epoxide resin laminates by the wet lay-up process. The use of epoxide resins can extend the application of glass reinforced laminates, particularly in the fields of chemical resistance.

The information sheet describes how the method is very similar to that used with polyester resins and differs only in detail to accommodate the different wetting and curing characteristics of the epoxide resin systems.

Further information is available from Bakelite Ltd.

Hycar Polyblend Latex 552

British Geon Ltd. has issued a new information sheet on its Hycar Polyblend 552, a latex blended from pvc and a butadiene/acrylonitrile rubber.

Hycar Polyblend latex 552 has been developed for general coating purposes, and has been used in the paper industry. Cured films from Polyblend 552 are claimed to have high mechanical strength together with good grease resistance.

Information on Hycar Polyblend Latex 552 is given in Hycar information sheet No. H109 available from the Information Department of the company at Devonshire House, Piccadilly, London, W.1.

Rotational Casting PVC

The rotational casting process has largely superseded slush moulding as a method for producing hollow flexible and semi-rigid pvc articles because it offers higher output rates and almost eliminates scrap wastage.

Information Service Note No. 848 issued recently by the Plastics Division of I.C.I. — and available from I.C.I. sales offices — describes the rotational casting process and gives full details of formulations for various applications. Information is also given on the equipment necessary, the ingredients for the pvc pastes used, paste mixing, applications and finishing. Notes are also included giving examples of the types of defect which can occur because of lack of experience, the reasons for them and methods of rectification.

Publications

Bulk Deliveries by Berk

The first of a series of booklets entitled 'Bulk Deliveries by Berk' has been published by F. W. Berk and Co. Ltd., Stratford, E.15. It deals with hydrochloric acid and certain metal chloride solutions. It has been prepared by the company's technical advice service to give information and help to any of their customers who may be considering the installation of bulk storage facilities for these chemicals.

Advice is given on the design, positioning and maintenance of storage tanks, on the materials recommended for use, and on the ancillary equipment necessary for safe and trouble-free operation. Delivery procedures, safety precautions, and the prevention of atmospheric contamination, are discussed.

Polyurethane Foams

The Dyestuffs Division of Imperial Chemical Industries Ltd. has issued No. 10 in its series of urethane chemicals literature. This booklet gives information on flexible polyurethane foams made from Daltocel T56 and Suprasec EN by the single-stage process.

The introduction of catalysts of new types for the reaction of isocyanates with polymers and water simplied the manufacture of flexible urethane foams from polyethers. Using the tertiary amines originally developed for the polyester foam process — for example, Catalyst SFC — it was necessary first to react the polyether with the isocyanate in a separate operation to produce a prepolymer and subsequently to react that prepolymer with water and possibly a further proportion of isocyanate. In the single stage the use of certain metal-containing organic compounds and special tertiary amines allows the two fundamental reactions of foam-making to proceed side by side with the eventual attainment of a well-cured low-density flexible foam. Although the principal starting materials for the prepolymer and the single-stage processes may be identical, the final foam products may differ in some respects.

Polythene Film

British Cellophane Ltd., Henrietta House, 9 Henrietta Place, W.1, has issued a booklet on polythene film. The booklet is a general introduction to the properties and uses of the polythene films produced by BCL.

There are three grades of this film — the standard grade which is the normal grade for packaging; higher clarity-film with better transparency, for use when display is of importance; and impact resistance, a special film with increased resistance to bursting, for use when sudden stress has to be withstood.

Machines, Materials and Equipment

Air Foam Extinguisher

A two-gallon capacity Valor air foam extinguisher manufactured by the Valor Co. Ltd. at its Erdington, Birmingham, factory, is for class B risks, *i.e.* involving inflammable liquids, and suitable for petrol, oil, paint, tar and rubber outbreaks.

It is claimed to have rapid action, requires little maintenance and will not harm furnishings, materials and fabrics. Further information and current prices can be obtained from the company.

Flue Dust Removal Plant

A new heavy duty vacuum cleaner and flue dust removal plant known as the Bivac FDP has been introduced by Bivac Air Co. Ltd., Marshland Street, Stockport.

This machine has been produced to fulfil the need for a portable industrial suction unit where removal of ash and powdered material is required. It is claimed to be ideal for boiler flue dust and PF dust removal. A large storage capacity is provided, designed to be used for the removal of red hot dust. For bulk removal the rate is between two and three tons per hour, using two operators, each with a 30ft. length of hose and aerated suction nozzle. One or two operators can use the machine at the same time for bulk removal, or three to four operators on general vacuum cleaning work.

A filter is used in the final filtration stage, and the total dust storage capacity available is 10.5cu. ft., giving a working capacity of 735lb. of flue dust at 70lb. per cu. ft. An unloading trolley is provided for the removal of the three main dust containers when full.

Shell Process Oils offer great variety

If you are a chemist selecting an oil as an ingredient in a product, or as a processing aid, or as an inert carrier for other materials, you should consult Shell who have available a wide range of mineral hydrocarbon oils. Shell Process Oils, produced at the many refineries in the United Kingdom and overseas and backed by Shell Technical Service, offer a great variety of chemical and physical properties that will satisfy most requirements.

Shell Process Oils are inexpensive. Mineral hydrocarbon oils are very low in price compared with vegetable oils which they can sometimes partially replace. Furthermore, Shell Process Oils are stable in storage and easy to handle, and the services of Shell chemists, with their experience of the use of oils in chemical processes, are available to assist in selection.

Find out about Shell Process Oils. They are inexpensive, offer great variety and are backed by Shell service and experience. Write to...

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Shell-Mex House, Strand
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BARIUM
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Pumping LATEX from storage tanks at Hull Docks using GRESHAM'S

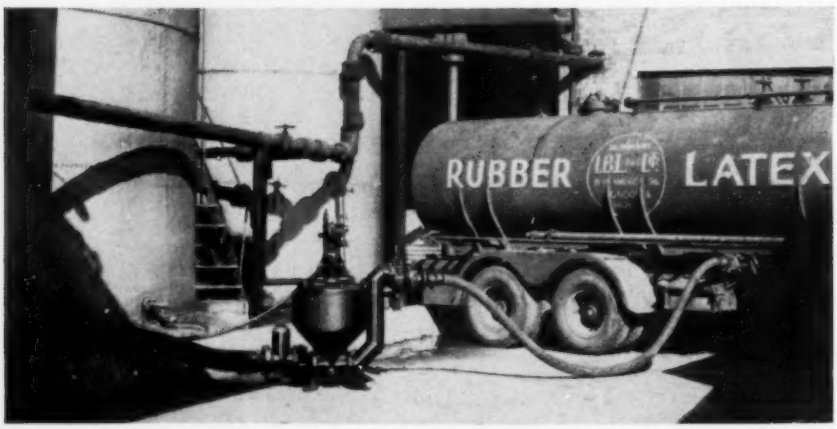

Photo by courtesy of International Bulk Liquids (Storage & Transport) Ltd

Self Priming - No water needed. No lubrication - Minimum Maintenance. Suction lifts up to 15 feet. Discharge heads up to 50 feet. Sizes 1¼" to 6". Capacities 600 to 10,000 galls. p.h. In daily use in ports for pumping direct from ships' tanks to shore installations and in factories for transfer, circulating and process work.

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4045

Synthetic Rubber Prices

Prices of synthetic rubbers appear regularly in RUBBER AND PLASTICS WEEKLY *in the first week of each month. It will be appreciated if suppliers will give notification of any price changes or additions to their range. Cif duty paid quotations are subject to slight variation due to exchange, ocean freight and insurance fluctuations. Prices are in pence per lb., except where otherwise stated. Grades are expressed as follows:* 1001/2/6 = *grades* 1001, 1002 *and* 1006.

(e-qdp)—Ex-quay duty paid (cif UKdp)—cif UK duty paid (e-i)—Ex-installation (ddp)—Delivered duty paid (e-sUK)—Ex-store UK (ex-wUK)—Ex-warehouse UK (d)—Delivered BM—black masterbatch CBM—cold, black masterbatch CNP—cold, non-pigmented CNS—cold, non-staining COE—cold, oil extended COELC—cold, oil extended, light coloured CO/BM—cold, oil/black masterbatch CPOE—cold, pigmented, oil extended CRE—cold, rosin extended dw—Dry weight HN—high nitrile HNP—high nitrile, powder HP—hot, pigmented HS—high styrene HMW—high mol. wt. LMW—low mol. wt. MHN—medium high nitrile MLN—medium low nitrile MMW—medium molecular weight MN—medium nitrile NS—non-staining TS—total solids RTV—room temp. vulc.

SBR TYPES AND HIGH-STYRENE RUBBER

Ameripol (Goodrich Gulf) (e-qdp)

1000/1/6/7	Hot, non-oil	22.50
1002/12	,, ,,	22.75
1009	,, ,,	24.25
1011	,, ,,	23.25
1013	,, ,,	23.50
1019	,, ,,	24.75
1006/12	Hot, crumb	23.00
1009	,, ,,	25.00
1013	,, ,,	24.00
1500/1/2/9/11	Cold, non-oil	22.50
1605	BM, cold, non-oil	18.75
4658	,, ,, ,,	19.25
1606/8	,,	18.25
1609	,,	20.25
1610	,,	18.75
4651	,,	17.75
4600G2, 4604	Cold, non-oil	22.50
1703	COE, 25% oil	19.75
1705	,, ,, ,,	19.50
1707/8	,, 37.5% ,,	18.25
1710/12	,, ,, ,,	18.00
4700	,, 50% ,,	16.75
4760	COBM, 17.5% oil	16.25
1805	,, 37.5% oil	16.00
1809	,, ,, ,,	15.75
4756	,, ,, ,,	15.75
4759	,, ,, ,,	16.25
1808	,, 50% ,,	15.25
4758	,, 62.5% ,,	15.00

ASRC (American Synthetic Rubber Corpn.) (e-sUK)

1004/6	Hot, non-oil	22.25
1009	,, ,,	24.0
1018	,, ,,	24.75
1019	,, ,,	24.5
1500/2/7	Cold, non-oil	22.25
1503	,, ,,	24.25
1703	COE	20.5
1708	,,	18.0
1712	,,	17.75
1713	,,	16.75
3014	Hot, non-oil	25.75
3105/6	Cold, non-Oil	22.25
3110	,, ,,	24.0

Cariflex (Shell Chemical) (e-sUK)

S-1000	Hot	22.25
S-1002	,,	23.375
S-1006	,,	22.25
S-1009/11/13	,,	24.0
S-1500/2/9	Cold	22.25
S-1600/2	CBM	19.625
S-1605	,,	19.375
S-1606	,,	18.75
S-7652	,,	20.0
S-1703	COE	19.25
S-1707	,,	18.0
S-1709/12	,,	17.75
S-1803	COBM	17.875
S-1806	,,	16.625
S-1807	,,	17.375
S-1808	,,	15.25

Contract terms available.

FR-S (Firestone) (delUK*)

1000/1/4/6/7 and 195	Hot	22.50
1500/2 and 146	Cold	22.50
1703 and 173	OE	19.11
1710/12 and 184	,,	18.00
178	,,	18.25
201	,,	16.71
1009 UK Specialty		23.06
1012 ,, ,,		22.59
1013 ,, ,,		23.59
1014 ,, ,,		26.18
181 ,, ,,		22.50
182 ,, ,,		23.29
147 ,, ,,		20.94
158 ,, ,,		28.00
158-S		27.50

*Import Duty not included

Int. Synthetic Rubber (d)

Intol 1500/2	22.5
Intol 1509	22.5
Intol 1570	23.5
Intol 1006	22.5
Intol 1710	18.0
Intol 1712	18.0
Intol 1778	18.25

Naugapol (Naugatuck Chemical International) (ex-WUK)

1016/9	28.5
1018	29.0
6003	29.0
1022	32.25
1023	34.5
1503	28.25
6102	28.25
1504	36.5
6101	24.5
6100	33.5
K-45	28.25
K-50	28.75
KO-50	29.25
1015	36.5
6004	27.0

ANIC (e-qdp)

1500	22.25
1502	22.25
1705	18.00
1712	17.75
6630	23.25
6632	22.25
6700	16.375

Philprene (Phillips) (d)

1000/6	Hot, non-pig.	22.50
1009	,, ,,	23.06
1018	,, ,,	24.99
1019	,, ,,	24.56
6701	,, ,,	22.50
1500/2	CNP	22.50
1503	,,	24.35
6630	,,	23.75
6632	,,	22.50
1601	CP	19.70
1603	,,	19.25
1605	,,	18.75
1606	,,	18.25
1608	,,	18.75
1609	,,	21.27
6655	,,	19.25
1703	COE	19.50
1708	,,	18.25
1712	,,	18.00
6700	,,	16.85
1803	CPOE	18.13
1805	,,	16.00
1808	,,	15.50
6608	,,	15.33
6753	,,	15.50
6754	,,	15.25
6755	,,	17.50

Plioflex (Goodyear) (ex-wUK)

1006	Hot, non-oil	22.25
1019/1503	CNP, electrical	22.25
1500/2/7/10	CNP	22.25
1006S		22.75
1712C	COE	17.75
1708/78	,,	18.00
1713/15	,,	16.25
1714C	,,	16.00
1773	,,	19.25
224	HS(d)	27.00

Polysar (Polymer UK) (e-sUK)

S/S-630 Hot	22.50
Krylene	22.50
Krylene NS	22.50
Krylene 602 Cold	22.50
Krynol 651 COE	18.00
Krynol 652.4 ,,	18.25
Krynol 653 ,,	18.00
S-X 371 Process Aid	24.08

Synpol (Texas-USChemical) (e-qdp)

1000/1/6/7/61/61C	Hot	22.25
1009	,,	22.81
8000	,,	22.25
1500/2/51	Cold	22.25
8104	,,	22.25
1703	COE	19.25
1707/8/8200	,,	18.00
1712	,,	17.75
8201/8	,,	16.59
8202	,,	16.38
8209	,,	19.16
1606	CBM	18.20
1608	,,	18.45
1806	COBM	15.84
1808/8255	,,	14.80
8257	,,	14.96
1814	,,	15.45

(Masterbatch prices US cents per lb fas Gulf ports)

SBR LATICES

Copo (Copolymer) (cif UKdp)
(10-ton lots)

2101	(dw)	46.3
X-765	,,	40.8
X-800	,,	37.2
2102/5	,,	38.0

Ciago

SB75	38.00
SB69	36.00
SB57P BM	27.50
SB58P	29.75

Pliolite Rubber (Goodyear) (d)

2000	40

Latex (dw)

2001/4/5/8	40
5350	40

Pliolite Resin (Goodyear) (d)

101A (dw)	44
150 ,,	50
151 ,,	35
160 ,,	50
170 ,,	50

Hycar (B. F. Goodrich) (ddp)

2507 (HS) dw	48

Polysar (Polymer UK) (e-sUK)

Latex, type IV	32.50 TS
Latex, type 722	31.75 TS
Latex, type 741	36.00
Latex, type 781	68.00
(Non-returnable 45-gallon drums)	
Latex, type IV	29.00
	(e-i)
Latex, type 722	27.00 TS
Latex, type 723	27.00
(bulk quantities)	

Int. Synthetic Rubber (ex-wks)

Intol Latex M23B/R23/F28	22.25
Intol Latex 62A	27.0

Dylex (Koppers Int. CA) (fas)

K-42A/52/31/900	31.6

ACRYLONITRILE TYPES

Butaprene N (Firestone) (cif UKdp)

NL	52.5
NAA	56.25
NF	51.5
NXM	60.18

Chemigum (e-s)

N—1	75
N—3A	52
N—5	52
N—6G/7/8/600X	45

Hycar (British Geon) (UKd)
(500-lb. lots and over)

1001 High Nitrile Hot	52
1041 ,, Cold	52
1002 MHN Hot	45
1042 ,, Cold	45

Hycar (B. F. Goodrich) (ddp)
(500-lb. lots and over)

1411 HNP	66
1432 MHN (crumb)	64
1072 ,, (carboxyl)	66
1312 ,, (liquid)	55
1043 MLN	51
1014 Low Nitrile	61

I.C.I. (min., 5-cwt. lots) (UKd)

Butakon A-4051 HN Cold	52
Butakon A-3051 MN Cold	45
Butakon A-3002 ,, ,,	45

Paracril (US Rubber) (dwe-sUK)

18-80 Low Nitrile	61
AJ ,, ,,	50
B MLN ,,	51
BJ ,, ,,	51
BLT ,, Cold	51
BJLT ,, ,,	51
C MHN ,,	59
CLT ,, Cold	59
CV ,, (crumb)	63
D High Nitrile	67
ALT	51
OZO	47

Polysar (Polymer UK) (d)

Krynac 800 MN	45
Krynac 802 LN	45
Krynac 803 MN (low Mooney)	45
Krynac 801/5 HN	52
Krynac 804 (MN-cross linked)	45

ACRYLONITRILE LATICES

Butaprene N (Firestone) (cif UKdp)

N-300 (dw)	53
N-400 ,,	60.5

Chemigum Latex (Goodyear) (d)

200 (dw)	65
235/6 CHS ,,	60
245 B ,,	52
245 6/7/8 CHS ,,	52

Ciago

AB61/71	60
AB62/77	52
2170H	60

Hycar (B.F. Goodrich) (ddp)
(dry weight, drum lots)

1551 High Nitrile	66
1552 MHN	57

Hycar (British Geon) (UKd)
(dry weight, 3 drums and over)

1561 High Nitrile	60
1571 ,, (carboxyl)	60
1562 MHN	52
1577 (modified)	52

ACRYLIC TYPES

Hycar (B. F. Goodrich) (ddp)

4021 Slab, 500 lb. and over	144
4501 Latex, dry weight	96

BUTYL TYPES

Esso (e-sUK)

Regular 035/150/215	21.75
Regular 217/8	21.75
Regular 325	21.75
Non-staining 165	22.75
Non-staining 268	22.75
Non-staining 365	22.75

Polysar (Polymer UK) (e-sUK)

Butyl 100/200/300		21.75
Butyl 301/400	NS	21.75
Butyl 101	NS	26.25
Butyl 402	NS	22.5
Butyl 600	NS	25.75

Hycar (B. F. Goodrich) (ddp)
(500 lb. and over)

2202 Brominated	68

ISOPRENE RUBBER

Shell Chemical Co. (e-sUK)

Cariflex I-300	26.5
Cariflex I-500 OE	23.5

POLYBUTADIENE

Int. Synthetic Rubber (UKd)

Diene 35	27.0
Diene 50	27.0

NEOPRENES

Du Pont (UK production)

W	(del)	38.5
WHV	,,	37.0
WX	,,	40.5
WRT	,,	44.0
GS	,,	41.0
GRT	,,	42.0

(USA production)

AC/AD	(del)	57.125
S	,,	45.625
KNR	,,	75.625
CG	,,	57.125

Latices (UK)

842A	(dwdel) 45-gal. drums	41.0
842A	,, 2,000-gal. tanker	36.0
601A	,, 45-gal. drums	45.0
601A	,, 2,000-gal. tanker	40.0

Latices (USA)

60	(dwdel) 45-gal. drums	51.875
400	,, ,, ,,	54.125
571	,, ,, ,,	49.75
572	,, ,, ,,	51.25
635	,, ,, ,,	53.625
650	,, ,, ,,	54.125
673	,, ,, ,,	62.0
735/6/50	,, ,, ,,	51.25
950	,, ,, ,,	58.25

HYPALON (ddp)

20	48
30	60.25
40	50.75

SILICONE RUBBERS

Midland Silicones
(500-lb. lots del)

Stocks	16s. 6d. to 35s.
Pastes	26s. to 35s.
Gums and base stock	36s. to 42s.
Cold-curing silicone rubber	20s. and 23d. 6d.

I.C.I. Silicones

Gums (40-lb. lots del) 39s. 6d.-47s.
Stocks (250-lb. lots del) 22s.-35s.
Pastes (1000-lb. lots del) 27s. 6d.-35s. 9d.
Silcoset (RTV) (250-lb. lots del) 21s. to 24s.

REINFORCING RESINS AND RUBBERS

I.C.I. (min., 2-ton lots) (UKd)

Butakon S-8551	36.5
Butakon S-7001	33.5

Hycar (B.F. Goodrich) (ddp)

2007 (powder)	42.5

Pliolite (Goodyear) (d)

S—6B	36.5

Polysar (Polymer UK) (e-sUK)

SS-250 HS (bale)	27.00
SS-250 ,, (flake)	27.25
S-X370	23.75
S-X371	24.25
SS-260 (flake)	29.25
Kryflex 200	23.75
Kryflex 252 HS	25.25
Kryflex 202 (HMW Cold polymerized)	23.50

Cariflex (Shell Chemical) (e-sUK)

SP-103	27.25

Cyclite (Durham Raw Materials) 42

TRADE MARKS

Objections to the registration of any of the undermentioned applications may be lodged with the Comptroller-General of Patents, Designs and Trade Marks at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.2, within one month of the date mentioned. The objections must be stated on Trade Marks Form No. 7, cost £2, obtainable through any money order office. The extracts—from 'The Trade Marks Journal'—given below are reproduced by permission of the Controller of H.M. Stationary Office.

(812,393). Polypropylene in the form of powders, pastes, liquids, emulsions, dispersions, pellets and granulates, all for industrial use. Imperial Chemical Industries Ltd., Imperial Chemical House, Millbank, London, S.W.1. (Class 1; August 2 1961.)

Femasol (816,927). Plasticisers being chemical substances for mixing with cement, mortar and concrete, to improve the properties thereof. Fletcher Miller Ltd., Alma Mills, Hyde, Cheshire. (Class 1; August 2 1961.)

Arrcostrene (817,668). Plastics included in Class 1. The Rubber Regenerating Co. Ltd., First Avenue, Trafford Park, Manchester 17. (Class 1; August 2 1961.)

Maxi-Trek (819,196). Tyres and inner tubes therefor. Henley's Tyre and Rubber Co. Ltd., Bath Road, Melksham, Wiltshire. (Class 12; August 2 1961.)

Crystalphane (818,628). Films and sheets of plastics, for wrapping and packaging purposes. Spicers Ltd., 19 New Bridge Street, London, E.C.4. (Class 16; August 2 1961.)

Ofmex (818,765). Paper, paper articles and cardboard articles, all included in Class 16; cardboard, book-binding material; stationery; typewriters and office requisites (other than furniture). Ofrex Ltd., Ofrex House, Stephen Street, London, W.1. (Class 16; August 2 1961.)

Rayclad (B814,168). Articles made wholly or principally of plastics, for use in the insulation of electrical apparatus. Raychem UK Ltd., Highams Park, London, E.4. (Class 17; August 2 1961.)

Crystalphane (818,629). Plastics included in Class 17 in the form of plates, foils, sheets and shaped pieces. Spicers Ltd., 19 New Bridge Street, London, E.C.4. (Class 17; August 2 1961.)

Chemfast (820,623). All goods included in Class 1. Chemidus Plastics Ltd., Dominion Buildings, South Place, London, E.C.2. (Class 1; September 13 1961.)

Celcon (816,109). Thermoplastics included in Class 1 for use in industry. Celanese Corporation of America, 180 Madison Avenue, New York, 16, State of New York, USA, and 49 Old Bond Street, London, W.1. (Class 1; September 13 1961.)

Vycast (816,418). Thermoplastics in liquid form in a plasticizer or solvent base. Plastic Coatings Ltd., Woodbridge Industrial Estate, By-pass, Guildford, Surrey. (Class 1; September 13 1961.)

Partex (818,195). Sleeves of plastics, for attachment to electrical wires, cables, terminals and the like, for identification purposes. Nils Oskar Tore Lööf, Gullspang, Sweden. Address for service is c/o Forrester Ketley and Co., Jessel Chambers, 88-90 Chancery Lane, London, W.C.2. (Class 1; September 13 1961.)

Ressol (815,014). Materials in sheet form made of resin plastics or of rubber, for use in soling and heeling footwear; and asbestos soles. Tanoplastics Research Ltd., Hatherton Street, Walsall, Staffordshire. (Class 17; September 13 1961.)

Coolag (B815,970). Insulating materials made of foamed plastics. Coopers Plastic Foams Ltd., Seeleys Road, Greet, Birmingham. (Class 17; September 13 1961.)

Termex (816,062). All goods included in Class 17. H. D. Symons and Co. Ltd., Park Works, Kingston Hill, Surrey. (Class 17; September 13 1961.)

Celcon (816,112). Thermoplastics included in Class 17 in the form of sheets, blocks, rods and tubes, being for use in manufactures; and electrical insulating material. Celanese Corporation of America, 180 Madison Avenue, New York, 16, State of New York, USA, and 49 Old Bond Street, London, W.1. (Class 17; September 13 1961.)

Woodplast (B818,955). Plastics included in Class 17 in the form of sheets, profiled sections, beadings, bands, strips, films, plates, slabs, blocks, bars, rods, tubes or cylinders, all for bonding to wood. Melwood Thermoplastics Ltd., Willoughby Road, Harpenden, Hertfordshire. (Class 17; September 13 1961.)

Chemfast (820,626). All goods included in Class 17. Chemidus Plastics Ltd., Dominion Buildings, South Place, London, E.C.2. (Class 17; September 13 1961.)

Paraseal (821,524). Pipe joints of plastics. Yorkshire Imperial Metals Ltd., Haigh Park Road, Stourton, Leeds, Yorkshire. (Class 17; September 13 1961.)

Kingserete (817,547). Refractory cements and refractory mortars, all in plastics form, and for use in the lining of furnaces and of iron or steel ladles for use in foundries. Kingscliffe Super-Refractories Ltd., Sandiron House, Beauchief, Sheffield, 8. (Class 19; September 13 1961.)

Woodplast (B818,956). Windows and window frames; doors and door frames and panelling; all the aforesaid goods being made of wood and having veneer facings of plastics. Melwood Thermoplastics Ltd., Willoughby Road, Harpenden, Hertfordshire. (Class 19; September 13 1961.)

Nappatex (B807,773). Piece goods made of plastics of the kind used for making up into articles commonly made of fibrous textiles. Commercial Plastics Ltd., Willington Quay, Wallsend-on-Tyne, Northumberland. (Class 24; September 13 1961.)

Polyspring (B816,268). Floor mats of rubber and of plastics. Gaidec Ltd., 44 Pall Mall, London, S.W.1. (Class 27; September 13 1961.)

Celspray (816,318). Plastics in the form of powders, pastes, liquids, emulsions, dispersions and granulates, and being for industrial use by means of a spraying process. The Baxenden Chemical Co. Ltd., Clifton House, 83-117 Euston Road, London, N.W.1. To be associated with No. 806,885 (4,301, 132) and others. (Class 1; August 30 1961.)

Revacryl (821,747). Acrylic copolymer emulsions, being chemical substances used in industry. Revertex Ltd., 51-55 Strand, London, W.C.2. (Class 1; August 30 1961.)

Bostrel (817,646). Resilient joints made of rubber or synthetic rubber and metal, being fittings included in Class 12 for vehicles. Società Applicazioni Gomma Antivibranti SAGA Società per Azioni, Via Ripamonti N.88, Milan, Italy. Address for service is c/o G. F. Redfern and Co., Redfern House, Dominion Street, London, E.C.2. (Class 12; August 30 1961.)

(800,340). Wrapping and packing materials in the form of foils, paper, films of plastics or of combinations of any of the aforesaid materials; and bags and containers, all included in Class 16. Propack Gesellschaft Mit Beschränkter Haftung, Westendstrasse, Ludwigshafen am Rhein, Germany. Address for service is c/o Marks and Clerk, 57 and 58, Lincoln's Inn Fields, London, W.C.2. (Class 16; August 30 1961.)

Verester (810,445). Materials included in Class 17 in the form of sheets, rods, tubes, blocks, strips, filaments and shaped sections, all made wholly or principally of polyester resin plastics. Ducharne, 23 Rue de l'Amiral d'Estaing, Paris, France. Address for service is c/o Mewburn Ellis and Co., 70-72 Chancery Lane, London, W.C.2. (Class 17; August 30 1961.)

Durite (815,937). All goods included in Class 17, but not including glass insulators or plastics sheeting or articles made from plastics sheeting, or any goods of the same description as plastics sheeting or articles made therefrom. Gordon Equipments Ltd., 14, 16 and 18 Kings Place, Buckhurst Hill, Essex. (Class 17; August 30 1961.)

Aflux (820,057). Chemical products used in the manufacture and working of rubber; and synthetic resins for use in manufacture. Rhein-Chemie Gesellschaft Mit Beschränkter Haftung, Mülheimerstrasse 24, Mannheim-Rheinau, Germany. Address for service is c/o W. P. Thompson and Co., 12 Church Street, Liverpool, 1. (Class 1; September 6 1961.)

Celspray (816,319). Plastics included in Class 17 in the form of sheets, blocks, rods and tubes; imitation rubber and articles included in Class 17 made therefrom; and insulating materials made of foamed plastics. The Baxenden Chemical Co. Ltd., Clifton House, 83-117 Euston Road, London, N.W.1. To be associated with No. 806,886 (4,301, 144) and others. (Class 17; August 30 1961.)

Comete (817,783). Pipe couplings of plastics. Société Anonyme Eternit, 21 Rue Kuyerman, a Kapelle-op-den-Bos, Belgium. Address for service is c/o Haseltine, Lake and Co., 28 Southampton Buildings, Chancery Lane, London, W.C.2. (Class 17; August 30 1961.)

Impla (818,137). All goods included in Class 17. Impla Industria Meridionale Materie Plastiche Spa, St. Giovanni a Tedducio, 1 Via Pazzigno, Naples, Italy. Address for service is c/o Wilson, Gunn and Ellis, 57 Market Street, Manchester, 1. (Class 17; August 30 1961.)

Nordbak (811,252). Synthetic resins for use in industry. Nordberg Manufacturing Co., 3073 South Chase Avenue, City of Milwaukee 7, State of Wisconsin, USA. Address for service is c/o Lloyd Wise, Bouly and Haig, 10 New Court Lincoln's Inn, London, W.C.2. (Class 1; September 6 1961.)

Bostrel (818,502). Resilient joints made of rubber or synthetic rubber, and metal, being fittings included in Class 7 for machinery, aircraft and for watercraft. Società Applicazioni Gomma Antivibranti SAGA Società per Azioni, Via Ripamonti N.88, Milan, Italy. Address for service is c/o G. F. Redfern and Co., Redfern House, Dominion Street, London, E.C.2. (Class 7; September 6 1961.)

(812,604). Plastics in strip form for sealing joints. Expandite Ltd., Chase Road, London, N.W.10. (Class 17; September 6 1961.)

Singer (B788,477). Knee lifter pads for sewing machines, and pads for sewing machine stands, all made of rubber. The Singer Manufacturing Co., 107 Trumbull Street, Elizabeth, State of New Jersey, and 149 Broadway, New York, County and State of New York, USA. Address for service is c/o Cruikshank and Fairweather, 29 St. Vincent Place, Glasgow, C.1. (Class 19; September 6 1961.)

Rayolin (816,144). Insulating materials made of extruded irradiated plastics. Raychem UK Ltd., Highams Park, London, E.4. (Class 19; September 6 1961.)

Howesol (816,680). Sheets, strips, rods, tubes, foils and plates, all of plastics included in Class 17. Konrad Hornschuch Aktiengesellschaft Werk Weissbach, Weissbach/Württemburg, Germany. Address for service is c/o H. A. L. Venner, 1 Great James Street, Bedford Row, London, W.C.1. (Class 19; September 6 1961.)

Howesol (816,681). Roofing materials in the form of sheets, plates and foils, all of plastics. Konrad Hornschuch Aktiengesellschaft Werk Weissbach, Weissbach/Württemburg, Germany. Address for service is c/o H. A. L. Venner, 1 Great James Street, Bedford Row, London, W.C.1. (Class 19; September 6 1961.)

Ugigum (804,383). Gums made of synthetic resins, all for use in industry. Societe d'Electro-Chimie, d'Electro-Metallurgie et des Acieries Electriques d'Ugine, 10 Rue du Général Foy, Paris, France. Address for service is c/o Carpmaels and Ransford, 24 Southamnton Buildings, Chancery Lane, London, W.C.2. (Class 1; August 23 1961.)

Changes of Name

Clantixen Ltd. (675,607), Room 18, Queens College Chambers, Paradise Street, Birmingham 1. Name changed to Morbra Weatherwear Ltd. on February 24 1961.

Hainault Tyre and Rubber Co. Ltd. (514,387), Castle Gate, Reigate, Surrey. Name changed to Redland Exports Ltd. on September 26 1960.

Miles Marine Ltd. (651,884), Shoreham Airport, Shoreham by Sea. Name changed to Miles Marine and Structural Plastics Ltd. on March 17 1961.

R. H. C. Reclamations Ltd. (527,559), 2 Caxton Street, S.W.1. Name changed to R. H. Cole Plastics Ltd. on January 10 1961.

National Plastics Ltd. (426,783), Avenue Works, Walthamstow Avenue, E.4. Name changed to National Plastics (Holdings) Ltd. on March 22 1961.

NEW COMPANIES

Diamond Plastics Ltd. (699,934). August 2. Capital: £100 in £1 shares. To carry on the business of manufacturers of, and dealers in, plastic materials, etc. The directors are: Thomas Young, 42 Southbank Road, Southport; David W. Halsall, 19 Trafalgar Road, Southport. Regd. office: 42 Southbank Road, Southport.

Astralite Fabricators Ltd. (700,084). August 3. Capital: £100 in £1 shares. The directors are to be appointed by the subscribers. Regd. office: 62 Victoria Street, S.W.1.

Sebec Laminations Ltd. (700,626). August 11. Capital: £20,000 in 2s. shares. To carry on the business of processors of textiles and materials generally including the lamination of plastic and rubber foam or any other materials to and with textiles, etc. The first directors are to be appointed by the subscribers.

Memotrips Ltd. (700,597). August 11. Capital: £100 in £1 shares. To carry on the business of manufacturers of, and dealers in, tyres, etc. The first directors are to be appointed by the subscribers.

Plasticlas (1961) Ltd. (702,251). September 1. Capital: £1,000 in 500 'A' and 500 'B' shares of £1. To carry on the business of manufacturers of, and dealers in, and processors of plastics substances and materials, etc. The directors are: Cyril Green, 51 Portman Mansions, W.1; Harold Bloom, 3 Hendale Avenue, N.W.4. Regd. office: 57 George Street, W.1.

Tunnel Tyre Service Ltd. (702,279). September 4. Capital: £1,000 in £1 shares. The directors are: Frank L. Thatcher, Francis Thatcher and Hilda Thatcher, all of 92 Lakedale Road, S.E.18. Regd. office: 55 Burrage Road, S.E.18.

Goodlink Transmission Co. Ltd. (702,303). September 4. Capital: £2,000 in £1 shares. To carry on the business of manufacturers of, and dealers in, rubber, rubber chain belting, leather chain belting, etc. Leonard Goodwin signs as director. Regd. office: North Street, Openshaw, Manchester, 11.

James North and Sons (Far East) Ltd. (702,344). September 4. Capital: £100 in £1 shares. To carry on the business of manufacturers of, and dealers in, polyvinyl chloride, etc. The directors are to be appointed by the subscribers.

Courtland Plastics Ltd. (702,321). September 4. Capital: £100 in £1 shares. To carry on the business of manufacturers of, and dealers in, plastics goods, etc. The directors are: Ronald Edmondson and Margaret Edmondson, both of 35 Kenwood Drive, Beckenham; Barbara Hughes, 113 Elibank Road, S.E.13. Regd. office: 367a Footscray Road, S.E.9.

West Ferry Plastics Ltd. (701,383). August 22. Capital: £1,000 in £1 shares. The directors are to be appointed by the subscribers. Regd. office: 8 Eccleston Square, S.W.1.

Bateman and Reid (Vacuum Coating) Ltd. (702,146). August 31. Capital: £200 in £1 shares. To carry on the business of plastics engineering, etc. The directors are: Richard I. Bateman, 48 Calthorpe Road, Handsworth, Birmingham, 20; Charles G. Reid, 17 Forest Close, Streetly, near Birmingham. Regd. office: Back of 6 College Road, Quinton, Birmingham, 32.

Victor Plastics (Manufacturing) Ltd. (702,976). September 11. Capital: £1,000 in £1 shares. The first directors are to be appointed by the subscribers.

Ideal Manufacturers of Plastics Ltd. (703,055). September 12. Capital: £2,000 in £1 shares. The directors are: Alfred Stern, 22 Eastholm, N.W.11; Ralph Stern, 1 Grosvenor Road, Finchley, N.3 (directors of Ideal Button and Novelty Co. Ltd.). Regd. office: 106 High Street, Billericay, Essex.

Quayside Rubber Co. Ltd. (702,902). September 11. Capital: £500 in £1 shares. To acquire the business of scrap rubber and plastics dealers carried on by P. Harris, 107 Sandford Road, Newcastle upon Tyne, etc. The directors are: Peter Harris and Joan Harris, both of 10 Horsley Avenue, Park Estate, Shiremoor, Northumberland. Regd. office: 10 Horsley Avenue, Park Estate, Shiremoor, Northumberland.

Elastomer Products Ltd. (702,844). September 11. Capital: £1,000 in £1 shares. To carry on the business of manufacturers of, and dealers in, elastomers, plastics, natural and synthetic rubbers, etc. The directors are: Erwin Brecher, 54 Eyre Court, N.W.8; Dr Godfried Reuter (23) Lemfoerde 219, Germany. Regd. office: 26/9 Praed Street, W.2.

Tadsown Plastics Ltd. (702,909). September 11. Capital: £100 in £1 shares. To carry on the business of manufacturers of, and dealers in, plastics, modelling and moulding materials, etc. The first directors are to be appointed by the subscribers.

David Begg Plastics Ltd. (702,996). September 12. Capital: £2,000 in £1 shares. To carry on the business of dealers in plastics and plastics scrap, etc. David C. C. Begg and Joan L. Begg are the first directors. Regd. office: 9 Bucklersbury, E.C.4.

Increases of Capital

County Tyre Service (Bristol) Ltd. (372,078), 25 Nelson Parade, Bristol, 3. Increased on December 15 1960, by £7,500 in £1 ordinary shares, beyond the registered capital of £7,500.

R.G. Plastics Ltd. (613,200), 95/105 Constance Road, Leicester. Increased on December 20 1960, by £13,000 in £1 ordinary shares, beyond the registered capital of £2,000.

Herzbi Ltd. (674,582), exporters, imports, manufacturers of plastics, etc., 15 Red Lion Square, W.C.1. Increased on January 23 1961, by £400 in £1 ordinary shares, beyond the registered capital of £100.

Tyres (South Western) Ltd. (537,121), 10 Portland Place East, Tavistock Road, Plymouth. Increased on January 17 1961, by £10,000 in £1 ordinary shares, beyond the registered capital of £10,000.

Brooklands Selangor Rubber Co. Ltd. (108,735), 73/75 Mortimer Street, W.1. Increased on January 18 1961, by £106,500 in 2s. ordinary shares, beyond the registered capital of £805,500.

Ceylon (Para) Rubber Co. Ltd. (81,223), 21 Mincing Lane, E.C.3. Increased on January 25 1961, by £80,000 in 2s. ordinary shares, beyond the registered capital of £100,000.

Cotto (Scunthorpe) Ltd. (408,926), manufacturers of, and dealers in, plastics, etc., Enterprise Works, Digby Street, Scunthorpe. Increased on January 3 1961, by £29,000 in £1 ordinary shares, beyond the registered capital of £1,000.

CLASSIFIED ADVERTISEMENTS

RUBBER AND PLASTICS WEEKLY

APPOINTMENTS VACANT

8d. a word, Minimum 12/- Box 2/-

REQUIRED for small rubber service and research laboratory in Midlands. Young semi-qualified rubber technologist of LIRI standard. Opportunity to acquire extensive knowledge of acceleration of rubber compounds and investigation of compounding problems. Time allowed for study for Associateship. Contributory pension scheme. Nominal 5-day week. Canteen facilities.—Apply giving details of age, education, training, qualifications, and experience to Robinson Brothers Limited, Phoenix Street, West Bromwich, Staffs. (135)

A unique opportunity

occurs in a Company manufacturing Adhesives, Mastics and Building Chemicals for a Chemist. After an initial period he will be required to take responsibility for production, develop technical service; and have an interest in problems relating to new products. Experience, enthusiasm and willingness to accept responsibility are perhaps more important than professional qualifications. The age limits are 25-30 but older applicants will be considered. A good salary will be offered and there is wide scope in a small but rapidly expanding organisation. The Company is situated a few miles from Dublin.

Reply to: Managing Director,
Evode Industries Limited,
Swords,
Co. Dublin,
Eire. (136)

APPOINTMENTS VACANT (continued)

SENIOR process control technician wanted by George MacLellan and Co., Ltd. Applicants should have qualifications of HNC standard or better; with at least three years' experience of process control in the rubber industry. Preferred age is in the range 25-35. The man appointed will find the work interesting and varied; and will have good prospects of advancement in an expanding technical organisation.—Applications giving particulars of education, experience, and starting salary required, to Personnel Manager, George MacLellan and Co. Ltd., 125 Shuna Street, Maryhill. (131)

ASSISTANT EDITOR

Rubber and Plastics Weekly

invites applications for this position. The successful candidate will have had journalistic or publicity experience, and should be in early twenties. Although technical knowledge of polymers is not required he should have a good commercial experience of the rubber and plastics industries. He will be London based, but some travelling is involved.—Editorial Manager, Maclaren and Sons Ltd., 131 Great Suffolk Street, S.E.1.

APPOINTMENTS VACANT

National College of Rubber Technology

Holloway, London, N.7.

The Governors invite immediate applications for the following teaching appointments, which provide opportunities for personal and team research:—

(a) *Senior Lecturer in Engineering.* Applicants should be qualified engineers with personality and experience to introduce an engineering bias, and ability to plan courses and organise equipment for new laboratories. Salary scale—£1,601 x £50 x £1,801.

(b) *Lecturer in Physical Testing of Polymers.* Applicants should have academic and/or professional qualifications together with industrial or research experience of rubbers and flexible plastics. Salary scale—£1,421 x £35 x £1,561 x £40 x £1,601.

(c) *Assistant Lecturer in Polymer Chemistry.* Applicants should be Graduates or hold the Higher National Certificate in Chemistry. Duties will involve demonstrating and teaching in a laboratory devoted to polymer chemistry. Salary scale—£751 x £27 10s. x £1,163 10s. x £37 10s. x £1,201, plus allowance for degree, etc. Commencing salary according to qualifications and experience.

Apply, stating post in which interested, for application form and further particulars. (132)

PARKINSON COWAN require a manager for their precision rubber moulding division. Wide technical experience in formulations and manufacture essential. Must be prepared to accept commercial and technical responsibilities. Experience in thermo-plastics an advantage. Only competent and energetic men need apply.—Wellington Works, Queen Street, Great Harwood, Blackburn, Lancs. (127)

APPOINTMENTS VACANT

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require an

ASSISTANT PRODUCTION MANAGER

(Belting Division)

at Silvertown, London, E.16.

aged 27-40.

Candidates should hold an engineering degree or at least HNC (Mech) or equivalent. Have a minimum of 3 years' industrial experience, preferably in rubber or other process industry. Be capable of accepting the responsibility of a *senior management* post within 5 years.

Write immediately sending full particulars to:—
M. S. Allen,
(Ref. PM/B),
Central Personnel Department,
BTR INDUSTRIES LTD
Herga House, Vincent Square, London, S.W.1. (125)

TECHNICAL assistant to general manager required for growing company producing liquid handling devices from metal plastics and rubber. Duties will include: technical supervision of small rubber and plastic moulding shop. Developing new designs for production from prototype stage. 'Trouble shooting' on existing products. Qualifications: engineering or scientific degree or equivalent, several years' production experience, and preferably design experience also. A knowledge of rubber technology. Though a substantial salary will be paid, the man appointed will carry out experimental work personally, as present engineering staff is limited. Age 27-37.—Write giving brief details of qualifications and career to General Manager, Waddington and Duval (Holdings) Ltd., 214 Putney Bridge Road, London, S.W.15 (138)

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DU PONT

We require, for work in the Company's Elastomers Research Laboratory at Hemel Hempstead in Hertfordshire, England, a Graduate, aged about 30, with a BSc, AIRI or foreign equivalent degree. Technical knowledge of, and experience in the rubber industry is essential. The candidate should preferably be a European and in addition to speaking English must be fluent in French and/or German.

Please send brief details, including age, qualifications, experience and present salary, for the attention of the P.A. to the

Managing Director,
Du Pont Company (United Kingdom) Limited
at 76, Jermyn Street, London, S.W.1. (140)

RUBBER chemist/technologist required by a progressive medium-sized rubber company to fill the position of chief chemist. Applications are invited from chemists with experience in compounding, process control and development. A contributory pension scheme operates. Housing assistance will be given. All applications will be treated in confidence.—Write stating age, present salary and full details to Box 101. (101)

SPONGE chemist for development work and sponge technician for factory control required by expanding company in East Midlands. Pension scheme. Good conditions.—Write stating experience and salary required to Box 112. (112)

PLASTICS EXTRUSION TECHNICIAN

P. B. COW (Plastics) LTD

invite applications for the position of Extrusion Technician to carry out production development in their Extrusion Department. A sound overall knowledge of PVC Section Extrusion, an engineering background and an ability to work under own initiative are essential requirements, although academic technical qualifications would be advantageous. An attractive salary commensurate with age, experience, etc., will be offered and applications in confidence should be addressed to:—

P. B. Cow (Plastics) Ltd.,
5 Falmouth Road,
Trading Estate,
Slough, Bucks.

and marked for the attention of the Technical Director. (116)

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'COTSWOLD' dipping machines and circulating tanks for latex and PVC. New catalogues now available on request.—Lionel Hook and Sons, Ebley, Stroud, Glos. Tel.: Stonehouse 614/5. (380R)

MANUFACTURERS of roughing machines for rubber sheeting, sponge rubber, splitting machines, leather cloth plant, embossing plates and rollers, spreading machines and presses.—G. L. Murphy Ltd., Imperial Works, Menston, Nr. Leeds. (238R)

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EMB PLASTIC MOULDING MACHINE

Reavell compressor and receiver. 32.5 motor. Heater control panel. This machine is practically unused and in excellent condition.

MICKLEBURGH MACHINE TOOLS LTD.
Arundel Road, Uxbridge, Middlesex. Tel. Uxbridge 38979 or 36799 (087)

ONE Baker Perkins jacketed mixer, fitted with twin 'Z' blades and complete with Werner type tilting equipment, geared motor and starter.—Phoenix Rubber Co. Ltd., Slough. (139)

SHAW 60in. x 22in. mill with 100 h.p. drive. 30in. x 24in. and 21in. single geared cracker with 200 h.p. drive. Pair of 50in. x 18in. single geared mills with 140 h.p. drive. Several smaller mills.—Reed Brothers (Engineering) Ltd. (Mr. C. E. M. Hardie—Receiver and Manager), Replant Works, Woolwich Industrial Estate, London, S.E.18. Tel.: Woolwich 7611. (128)

TWIN roll calender mill, 36in. x 12in. complete. Recently overhauled. Inspection invited. Offers.—Box 122. (122)

UNUSED 60in. x 22in. single geared mixing mill, friction ratio 1.15 to 1, Vibro mounted, Lunn safety equipment driven by 125 h.p. slip ring motor.—Box 137. (137)

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The uses of Mica powder in rubber manufacture

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Mica powder shows advantages over other extenders. It increases compression hardness without undue reduction of other physical properties. The cost of latex foamed products can be reduced by offsetting this increase in hardness, by foaming the latex to a larger volume. Mica powders also facilitate mould release.

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Mica powder produces a marked hardening of latex film, making it particularly suitable for hard casting compounds, adhesives and latex flooring compounds. Mica is also excellent for preventing undue penetration of latex spreading compounds when applied to fabric and other porous bases.

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Mica powder is ideal with its chemical inertness and plate-like structure, it is equally effective applied either dry or wet, in the form of a slurry water or soap solutions.

SPONGE RUBBER

Mica is particularly effective as a filler. It increases the load bearing properties and also acts as a blowing aid by preventing collapse after moulding.

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TENSILE tester for sale, Goodbrand R.4. Modern machine, little used.—Box 126. (126)

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8d. a word, Minimum 12/- Box 2/-

LABORATORY-SIZE internal rubber mixer, Shaw, size K.01, Bridge-Banbury Midget, 'B' or 00 or equivalent required. Write giving full particulars, price and where can be inspected.—Box 134. (134)

TWO presses, 24in. x 24in. or larger, and hydraulic pumps, one 60in. mixing mill, one laboratory mixing mill.—Box 129. (129)

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INDEX to ADVERTISERS

	Page
Abrasive Developments Ltd.	—
A.E.W. Ltd.	—
Allcock, J., & Sons Ltd.	vi
Amalgamated Oxides (1939) Ltd.	—
Anchor Chemical Co. Ltd.	749
Anderson, Joseph, & Sons Ltd.	—
Armour Hess Chemicals Ltd.	757
Associated-Rediffusion Ltd.	—
Astor Boisselier & Lawrence Ltd.	—
Baker Perkins Ltd.	vii
Barwell Engineering Ltd.	782
Belgrave Industries (Exports) Ltd.	—
Berk, F. W., & Co. Ltd.	—
Berstorff, Hermann	—
B.I.P. Chemicals Ltd.	—
Birch, Singleton, W., & Sons Ltd.	—
Bone Bros.	—
Boston Marine & General Eng. Co. Ltd.	—
Bridge, David, & Co. Ltd.	Cover ii
Bright, John, & Bros. Ltd.	Cover iii
British Electrical Development Association	—
British Geon Ltd.	—
British Nylon Spinners Ltd.	—
British Recovered Rubber Co. Ltd.	iii
British Resin Products Ltd.	—
British Titan Products Co. Ltd.	—
British Transport Commission	—
Bush Beach & Segner Bayley Ltd.	—
Cabot Carbon Ltd.	—
Carter Bros. (Rochdale) Ltd.	—
Carlton Press Knives Ltd.	—
Chance & Hunt	—
Chemical & Insulation, Ltd.	ix
C.I.C. Engineering Ltd.	—
Cleggswood Oil Distillery Ltd.	—
Cohen, George, Sons & Co. Ltd.	—
Columbian International (Gt. Britain) Ltd.	i
Consolidated Zinc Corporation (Sales) Ltd.	x
Courtaulds Ltd.	v
Crosfield, Joseph, & Sons Ltd.	—
Croxton & Garry Ltd.	—
Derrick Davis Plastics Ltd.	—
Dietzel, Hugo	—
Distillers Co. Ltd., The	—
Dixon, T. H., & Co. Ltd.	—
Docker, John, & Co. (Engs.) Ltd.	781
Dunlop Rubber Co. Ltd.	—
Du Pont Co. (United Kingdom) Ltd.	744
Durham Raw Materials Ltd.	—
Economist Intelligence Unit Ltd., The	
Ellison, George, Ltd.	—
English Clays Lovering Pochin & Co. Ltd.	—
English Electric Co. Ltd., The	—
Esso	751
eur-O-matic	—
Fawcett Preston & Co. Ltd.	—
Ferguson, A. O., & Co. Ltd.	x
Ferguson, James, & Sons Ltd.	—
Ferguson Shiers Ltd.	—

	Page
Firestone Tyre & Rubber Co. Ltd.	—
Foamair Ltd.	—
Geigy Co. Ltd., The	—
Goodyear Tyre & Rubber Co. Ltd.	765
Greeff, R. W., & Co. Ltd.	—
Gresham & Craven Ltd.	774
Gummi und Asbest	—
H.F. Industrial Services Ltd.	—
H.K. Import & Export Ltd.	—
Halsteads Engineers (Leyland) Ltd.	xi
Hankin, Geo., & Co. Ltd.	781
Hardman & Holden Ltd.	—
Harrison Jones	—
Hatcham Rubber Co. Ltd.	xi
Hay & Robertson Ltd.	—
Hilton, Wallace, & Co. Ltd.	—
Hubron Rubber Chemicals Ltd.	—
Hughes & Hughes Ltd.	—
Hunt Heat Exchangers Ltd.	743
Iddon Bros. Ltd.	ii
Iliffe Industrial Publications Ltd.	—
Imperial Chemical Industries Ltd. (Billingham)	—
Imperial Chemical Industries Ltd. (Dyestuffs)	—
Imperial Chemical Industries Ltd. (Plastics)	xii
Imperial Chemical Industries Ltd. (Terylene)	—
Institution of the Rubber Industry	—
International Corporation Ltd.	—
International Synthetic Rubber Co. Ltd.	747
Ioco Ltd.	—
K.W. Chemicals	—
Kautschuk und Gummi	—
Kendell, T., & Sons Ltd.	iv
Ketjen Carbon	—
Kuala Lumpur-Kepong Amalgamated Ltd.	—
Lankro Chemicals Ltd.	—
Laporte Titanium Ltd.	—
Latex Engineering Co.	—
Lavino (London) Ltd.	—
Leaver, Donald, Ltd.	—
Leeds & Bradford Boiler Co. Ltd., The	
Lindsay & Williams Ltd.	—
Lonabarc Ltd.	iv
Londex Ltd.	—
London & Scandinavian	—
Lord, R., & Sons Ltd.	—
McKechnie Bros. Ltd.	—
Maclaine, Watson & Co. Ltd.	—
Mersey White Lead Co. Ltd., The	—
Metal Box Co.	—
Micafine Ltd.	780
Monsanto Chemicals Ltd.	755
Morton Machine Co. Ltd.	—
Muehlstein, H., & Co. (London) Ltd.	
Muller, Max	—
Natural Rubber Bureau	—
New Conveyor Co. Ltd.	—

	Page
Nederlandsch Verkoopkantoor Voor Chemische Producten N.V.	—
Noble Lowndes Pension Service, The	—
Northwestern Rubber Co. Ltd.	viii
Novadel Ltd.	—
Oswald & Duncan Ltd.	viii
Philblack Ltd.	—
Phoenix Rubber Co. Ltd.	—
Planters Engineering Co. Ltd.	—
Polymer (United Kingdom) Ltd.	Cover i
Preston Tyre Fabric Manufacturing Co. Ltd.	vi
Price's (Bromborough) Ltd.	—
Pullen, James H., (1942) Ltd.	—
Quick-Wrap Tubing Co. Ltd.	769
Reed Bros. (Eng.) Ltd.	—
Revue Generale du Caoutchouc	—
Rhein-Chemie GmbH.	—
Robinson Bros. Ltd.	—
Ro-Search Inc.	—
Robinson, Joseph, & Co. Ltd.	—
Rotunda Ltd.	—
Rubber Age (New York) Ltd.	—
Rubber Estate Agency Ltd.	—
Rubber Latex Ltd.	—
Rubber Regenerating Co. Ltd.	—
Scott Bader & Co. Ltd.	—
Sealants Ltd.	—
Shaw, Francis, & Co. Ltd.	Cover iv
Shell Mex & B.P. Ltd.	773
Shell Chemical Co. Ltd.	—
Shell International Chemical Co. Ltd.	759
Smith, Alfred, Ltd.	—
Smith, Wilfred, Ltd.	774
Squire, Frederick, Ltd.	—
Stechler, L., & Co. Ltd.	781
Steel, J. M., & Co. Ltd.	—
Steele & Cowlishaw Ltd.	—
Stocker, W. B., & Co. Ltd.	—
Storeys of Lancaster	771
Stott, James, Ltd.	—
Sturge, John & E., Ltd.	—
Sussex Rubber Co. Ltd.	—
Sutcliffe Engineering Components Ltd.	—
Sutcliffe Speakman & Co. Ltd.	767
Tanner Bros. (Greenfield) Ltd.	—
Tilghman's Ltd.	—
Union Carbide Ltd.	—
United Norit Sales Corporation Ltd.	—
United Wire Works Ltd., The	—
Universal Oil Co. Ltd.	—
Universal Oil Products Co.	—
Vacu-Blast Ltd.	—
Verson Engineering Co. Ltd.	—
Wallace, H. W., & Co. Ltd.	—
Wallis Engineering Co.	—
Washington Chemicals	—
Webb, W. F. (Engineers) Ltd.	—
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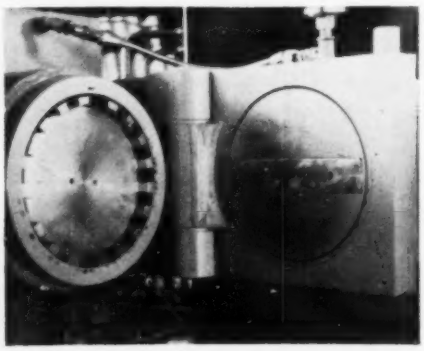

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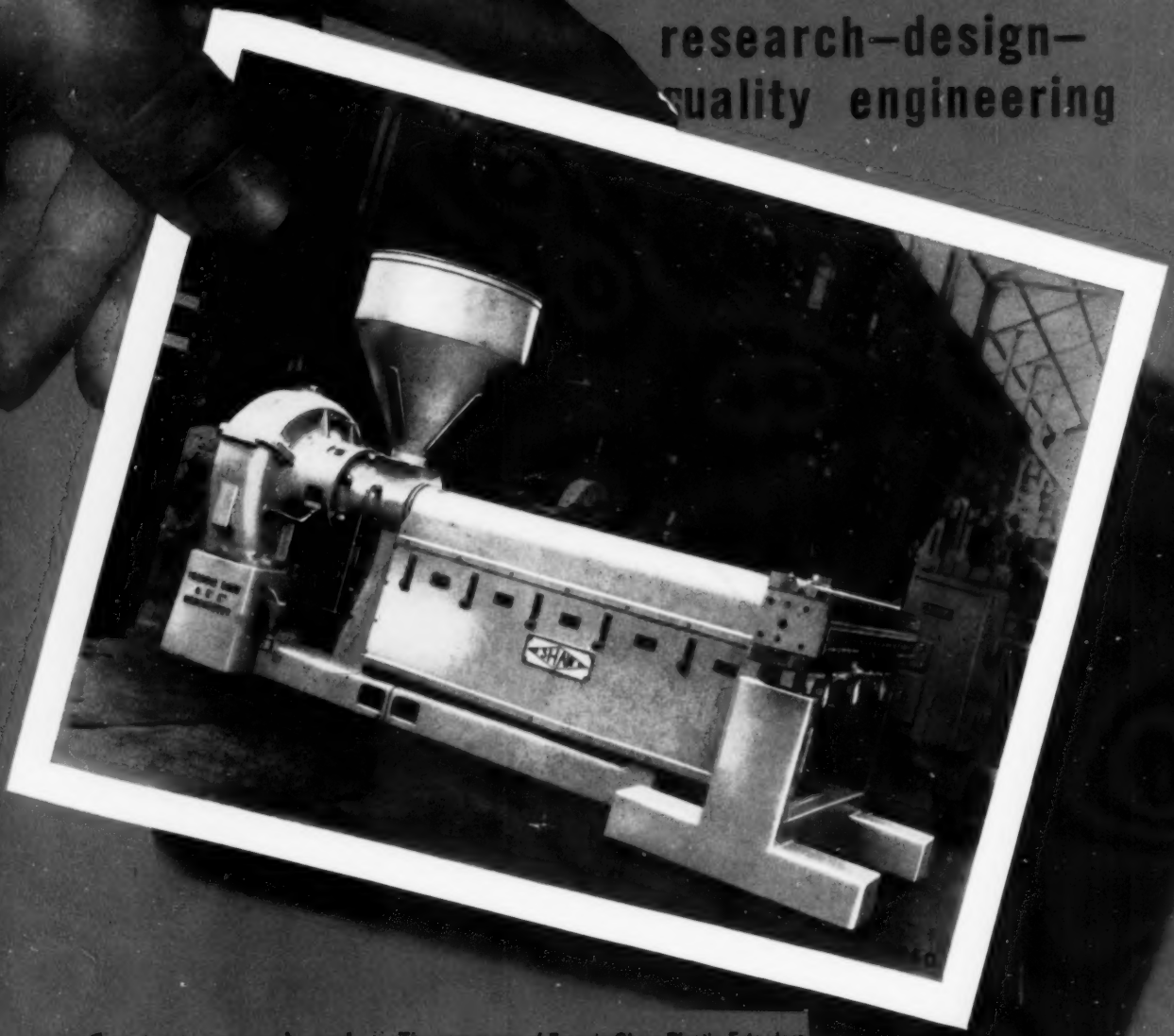

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